1990 INVESTIGATIONS AT FORT GIBRALTAR I:

THE FORKS PUBLIC ARCHAEOLOGY PROJECT

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1990 INVESTIGATIONS AT FORT GIBRALTAR I:

THE FORKS PUBLIC ARCHAEOLOGY PROJECT

by

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ABSTRACT

During the summer of 1990, funding from Canadian Parks Service, The Forks Renewal Corporation and Historic Resources Branch of Manitoba Culture, Heritage and Recreation (now designated Culture, Heritage and Citizenship) enabled the implementation of a 16 week Public Archaeology Program. The program provided a hands-on archaeological experience for more than 560 individuals, through general public participation and school program components. A total of 42,480 visitors came to watch archaeology-in-action.

The project was conducted by a staff of professional archaeologists, assisted by a participant coordinator and two tour guides. A ratio of two participants for each professional was maintained, both in the excavation component and the laboratory component. This ratio resulted in close supervision and the maintenance of professional standards. The enthusiasm and intense concentration displayed by the participants resulted in work of very high quality.

The excavation was a continuation of the 1989 project conducted at The Forks National Historic Site. The 1990 project uncovered further evidence of five major events. The major natural event, the flood of 1826, was identified in the soil stratigraphy. The four cultural events, documented by stratigraphy and recovered artifacts, were the Railway Period (1888–1988), the construction of the B&B Building (1888–1889), the Hudson's Bay Company Experimental Farm (1836–1848) and the Fort Gibraltar I Period (1810–1816). Structural remains of one of the buildings of the fur trade post were recorded.

More than 24,000 artifacts were recovered, catalogued and analyzed. The artifacts consist of material from recent railroad operations to trade items and faunal remains from the first North West Company fur trade post at The Forks.

Due to the enthusiasm displayed by members of the public, both as participants and as observers, it is recommended that the project be continued under the leadership of The Forks Public Archaeology Association.

GOALS AND OBJECTIVES

The 1990 Public Archaeology Project had two distinct foci, each with its own specific goals and objectives. The primary focus was the continuation of archaeological research to obtain additional data regarding Fort Gibraltar I (1810–1816)—the structures and the people who lived in them. In addition, the project was envisioned as an interpretation vehicle, wherein members of the public and the school system could participate in the *hows* and the *whys* of archaeology. The secondary focus, that of public education, was carried out in conjunction with the archaeological research program and in such a manner that the scientific integrity of the research was not affected.

The goals of the research component of the project were:

1. to obtain artifactual and stratigraphic evidence that would provide detailed evidence concerning the buildings and/or palisades of Fort Gibraltar I, in order to accurately determine the location of the fort and its internal design;
2. to obtain data that would help clarify the complex soil stratigraphy at the site and correlate the soil levels and riverine deposition sequences observed in 1984 and 1989;
3. to correlate artifact recoveries with those from 1984 and 1989 in order to develop a more complete picture of the activities which occurred at Fort Gibraltar I;
4. to further investigate features which had been recorded during the 1989 project;
5. to obtain further data concerning the events that had occurred in the area, before and after the establishment of Fort Gibraltar I (A.D. 1810);
6. to facilitate interdisciplinary investigations into the natural history of The Forks.

The goals of the public component of the program were:

1. to fulfill the public mandate of historic interpretation at The Forks for the community and visitors;
2. to demonstrate the role of archaeological fieldwork in the recovery and interpretation of heritage resources at The Forks;
3. to provide hands-on experience for interested members of the public who wished to participate in archaeological studies under the supervision of professional researchers;
4. to obtain tangible historical evidence that The Forks was used as a meeting place and to provide a link between the past, present and future;
5. to make the public aware of the significance of The Forks and its *in situ* archaeological resources;
6. to provide an opportunity for school groups to use the archaeology project as part of their social science curriculum;

7. to involve avocational groups such as the Manitoba Archaeological Society, the Manitoba Historical Society and the St. Boniface Historical Society in heritage programming at The Forks;
8. to determine appropriate mechanisms for future public archaeological programming at the site;
9. to involve the community-at-large in heritage programming at the site;
10. to help make downtown Winnipeg a focus of attention for residents and visitors.

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In the planning and implementation of a project of this magnitude, the efforts of many more people than the immediate staff are necessary. Sincere thanks are extended to the senior personnel of Canadian Parks Service (CPS), The Forks Renewal Corporation (FRC) and Historic Resources Branch, Manitoba Culture, Heritage and Recreation (HRB) for their visions and contributions to making the project a reality. Special gratitude is acknowledged to Ellen Lee, Rob Gillespie and Mike Fay [CPS], Al Baronas and Nick Diakiw [FRC], and Leo Pettipas and Donna Dul [HRB] for their considerable efforts expended during the planning of the project.

In numerous ways, the staff of the project were assisted by agencies and members of the archaeological community of Manitoba. Materials and supplies were provided by CPS, FRC and HRB. Primary funding derived from these three sources as well as Winnipeg Core Area Initiative (CAI). Office space for the Participant Coordinator was provided by the Manitoba Archaeological Society (MAS). Post-field season laboratory and research facilities at the Manitoba Museum of Man and Nature (MMMN)were provided through the efforts of Dr. E. Leigh Syms.

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1.0 INTRODUCTION

The implementation of a large-scale participatory public archaeology program at The Forks in 1989 was a unique project for Manitoba. Various types of public archaeology programs occur throughout the world. Some are predominately observatory, where members of the public are encouraged to watch professional archaeologists at work, while others are participatory. Most of the participatory public projects require the payment of a fee and require a minimum commitment of one week. These projects have been located in the United States, England and Israel as well as other countries.

Perhaps the most widely-known archaeological project/tourist attraction is the Jorvik Viking Centre in York, England (Addyman and Gaynor 1984). This project, which was able to raise 2.5 million pounds for development, attracts 850,000 to 900,000 visitors annually (Addyman 1989:2). However, the public experience is totally observatory with no opportunity for participatory involvement. A similar approach is employed at Flag Fen, in eastern England, which offers guided tours through an extensive working archaeological project. A notable feature of the Flag Fen project is that it operates seven days per week for a seven month period (Pryor 1989:57).

The 1989 Pilot Public Archaeological Project, conducted at The Forks National Historic Site in Winnipeg, also maintained a seven day schedule. During the first season of operation, from July 26 to October 9, 1989, a total of 41,439 individuals visited the project as observers. These visitors represented 32 countries, 32 American states and all Canadian provinces and territories except Prince Edward Island and Yukon Territory (Kroker, Goundry *et al.* 1990). Word of the project had spread far afield; when a group of Japanese officials visited The Forks in late November 1990, they requested a tour of the archaeological project (N. Diakiw 1990: pers. comm.). The 1989 hands-on program accommodated 220 members of the general public and 225 members of the school system. Special lecture tours were provided for an additional 850 students. Figures showing increased public use of the 1990 project are provided in Section 8.5.

The influence of the 1989 Pilot Project is obvious. Three public-oriented archaeological projects were undertaken in Manitoba this year: the 1990 continuation of the Public Program at The Forks (Fort Gibraltar I); a project at the Manitoba Glass Works near Beausejour (Spice 1991); and preliminary investigations for a public program focusing on Fur Trade and early Historic sites near Souris (Nieuwhof 1990).

1.1 Planning for the 1990 Project

Building on the knowledge gained from the 1989 Forks Public Archaeology experience, the individuals and agencies involved in the 1989 project developed a proposal for continued excavations during the summer of 1990. The original Policy Coordinating Committee and Site Coordinating Committee (Kroker, Goundry *et al.* 1990:6–7) were augmented by members of the public who had participated in the 1989 project and by representatives of heritage organizations. This enlarged body, known as the Interim Board of The Forks Public Archaeology Association (Section 8.6), appointed an Operations Committee which generated a workplan and budget for the 1990 project. The details of the planning will be discussed more fully in Section 8.1.

The Operations Committee recommended that the 1990 project be continued at the same location as the 1989 project (Figure 1). This decision was based upon availability of facilities as well as the need to complete excavations begun the previous year.

The 1990 project was funded by three agencies: Canadian Parks Service (CPS), The Forks Renewal Corporation (FRC), and Historic Resources Branch of Manitoba Culture, Heritage and Recreation (HRB). Details of funding, project organization and project staffing are discussed in Sections 8.2 and 8.3.

1.2 Scope of the 1990 Public Archaeology Program

The public phase of the project began on June 28, 1990 and ended September 28, 1990. Sixty days had been allocated for general public participation, with an additional ten days for school programming. During the program, some adjustments were made, resulting in 56 general public days and 14 school program days. During this period, a total of 319 individuals and 340 students participated in the hands-on component. An additional 691 students received in-depth lecture programs (Appendix C). Throughout the summer, 42,480 people visited the site (Section 8.5) to observe the operations, to listen to the tour guides, to pick up brochures detailing the project (available in Cree, Saulteaux, French and English) and to talk with professional archaeologists. While this number is greater than the 41,439 that visited the project during 1989, it must be noted that the 1990 project was four weeks longer than the 1989 project. The lessened number of people per day is consistent with a trend of lessened public visitation noted by other heritage based organizations—perhaps, in part, due to the current state of the economy.

The public involvement aspect of the project has been a resounding success. In two years, more than 85,000 people have taken the opportunity to view or participate in an on-going archaeological project, thereby increasing their knowledge of the archaeological process. In addition, they have gained a greater insight into the history of Winnipeg and, indeed, Western Canada, as exemplified through discoveries at Fort Gibraltar I.

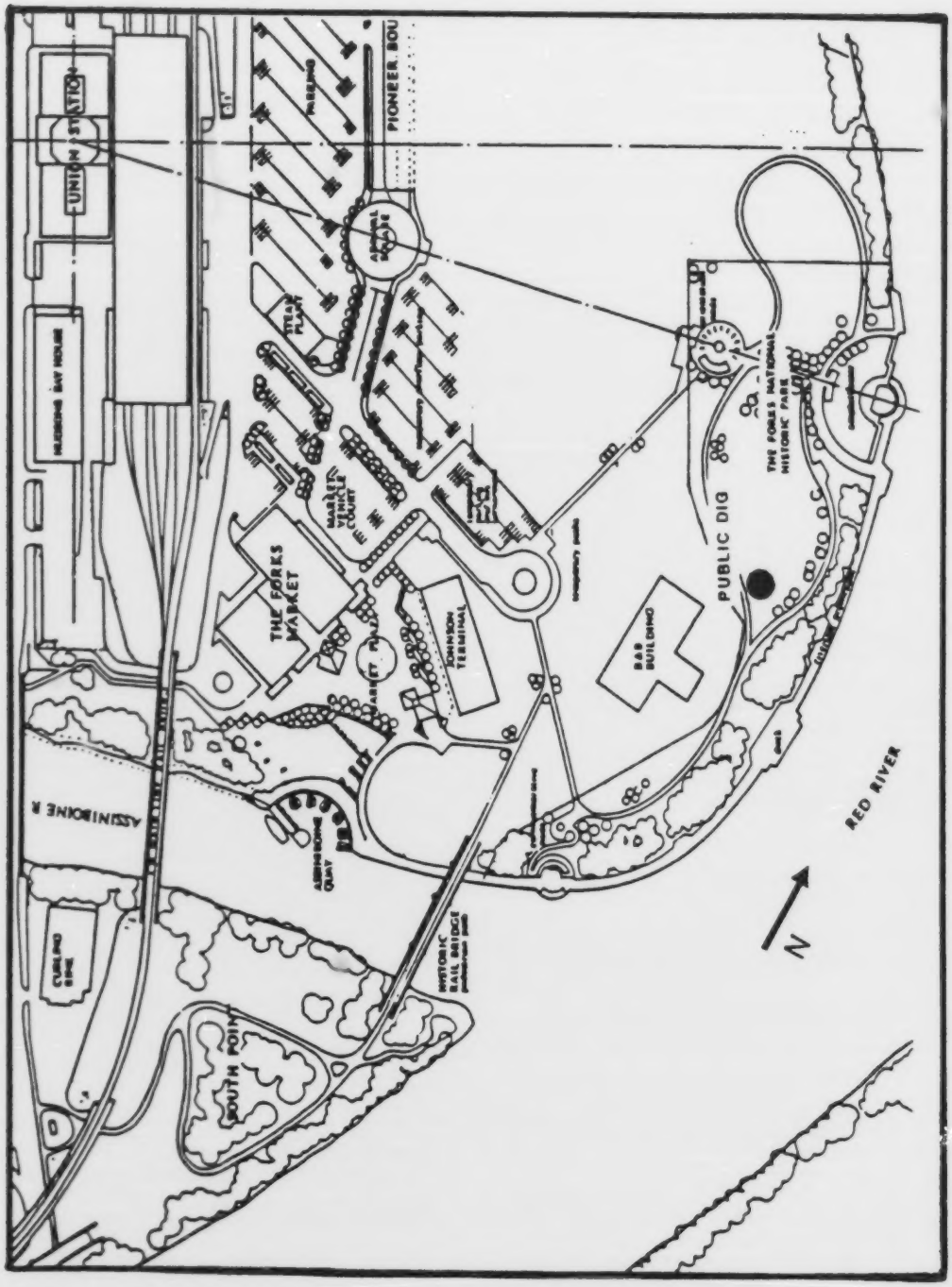


Figure 1: Map of The Forks (Courtesy of The Forks Renewal Corporation)

The 1990 Forks Public Archaeology Project excavations has provided additional data about events which have occurred at this location. Artifacts and contextual data concerning the Railroad Period, the construction of the B&B Building, the Hudson's Bay Company Experimental Farm and Fort Gibraltar I were obtained. These data have been analyzed in conjunction with the evidence relating to natural events such as the 1826 Flood, and with information retrieved during the 1984 CPS investigations (Priess *et al.* 1986) and the 1989 Pilot Public Archaeology Project (Kroker, Greco *et al.* 1990).

2.0 HISTORICAL BACKGROUND

The Forks became accessible for archaeological investigation in 1984 (Priess *et al.* 1986) during the planning phases for the creation of The Forks National Historic Site. Numerous archaeological projects have taken place at this site since 1988. Many of these projects resulted from development plans occasioned by the transfer of the East Yard from Canadian National Railway to The Forks Renewal Corporation and Canadian Parks Service. These projects have included impact assessments, mitigative operations and research-oriented projects as well as the Public Archaeology Program.

This brief overview is presented to allow the reader to place the 1990 discoveries in a chronological framework. For those who are interested in additional reading, the references cited in this section provide a starting point. An extensive list of references can be found in *The Forks Archaeological Impact Assessment and Development Plan* (FRC 1988: Appendix C).

2.1 The First Inhabitants

Archaeological investigations at The Forks have yielded some information on the earliest period of Manitoba history. Recent archaeological work at The Forks has shown that human occupation of the site area dates as far back as 6000 years ago (Kroker and Goundry 1990). While the quantity of data is still not large, it correlates with and confirms information derived from other parts of the province.

Approximately 9000–10000 years ago, Glacial Lake Agassiz drained from the Winnipeg area (Fenton *et al.* 1983; Last and Teller 1983; Teller and Thorleifson 1983). The region would have been colonized by both plants and animals and, following the new food sources, by people. The first occupation of The Forks likely occurred shortly after the lake waters drained into Hudson Bay. The people were bison hunters, who followed the herds into this area from the south and the west (Pettipas and Buchner 1983:444).

The recession of the glacial waters was followed by a long-term warming trend in the environment known as the *Altithermal* (or *Hypsithermal*). The Altithermal has been variously dated: 7000–2500 B.C. with the maximum temperatures at 3500 B.C. (Last and Teller 1983); 4000–1000 B.C. with a maximum at about 2000 B.C. (Ritchie 1983: 167); and 6000–2000 B.C.with the warmest period about 5200 B.C. (Ashworth and Cvancara 1983; Webb *et al.* 1983:162). The variations in time periods are the result of research in different areas; not all locations experienced the same climatic shifts at the same time.

The Altithermal period was characterized by drought conditions which likely caused the bison herds to abandon the central prairies. With a change in the availability of bison, human populations would have had to rely on a more varied diet of small game, fish and plants. Habitation sites would have been close to permanent sources of water. At The Forks, the remnants of two campfires were discovered during construction activities, north of the Assiniboine River. These campfires, containing charred fish bone, are estimated to be 6000 years old [4000 B.C.] (Kroker and Goundry 1990:162).

By 3000 B.C., groups of people who originally lived to the southeast of Manitoba began to move into The Forks region. They exploited a wide range of resources. This period, from 3000 B.C. to about A.D. 1, is known as the *Archaic* Period. Several groups of people who followed this way of life were likely visitors to The Forks. A major campsite of this period was discovered in 1988 (Kroker 1989). Other occupations of the same time period were located in 1989 (Kroker and Goundry 1990). Further work will be needed to detail the extent of these cultural deposits at The Forks.

Post-A.D. 1, an important technological innovation was introduced into southern Manitoba from the east. A forest-adapted culture in southeastern Manitoba began making ceramic containers, primarily using the coil technique. These containers, distinguished by various decorative markings, have been archaeologically designated as *Laurel* (Manitoba Culture, Heritage and Recreation 1989). Evidence of peoples of this culture has been found throughout the southern Boreal Forest and from the Red River to the Manitoba/Ontario border. In some areas, the Laurel culture lasted until A.D. 1000.

In southern Manitoba, a new pottery manufacturing technique with a different decorating style serves to denote the *Blackduck* culture. Sherds from vessels of this style are the earliest to be recovered at The Forks (Priess *et al.* 1986; Quaternary 1988, 1989; Kroker 1989; Kroker and Goundry 1990; Adams *et al.* 1990). Several radiocarbon dates were obtained from charcoal and animal bone associated with these ceramics. These dates, published in the above reports, range from A.D. 510 to A.D. 1450. Current evidence indicates that the Blackduck and subsequent ceramic traditions (Lenius and Olinyk 1990) continued until the advent of the Fur Trade.

Another ceramic tradition, the *Selkirk* tradition, developed in northern Manitoba around A.D. 1000 and expanded southward (McLeod 1987:48). Although the peoples of the Selkirk culture would have used The Forks, they lived primarily to the north and to the east of this area. Several sites in the Red River area have produced Selkirk ceramics (FRC 1988:39).

Unfortunately, no firm information is available to link groups of the late Pre-Contact period with those groups who were in the area when the first recorded Europeans visited the area in 1737. During the period immediately preceding the Fur Trade Period, Cree, Ojibwa/Saulteaux and Assiniboine groups regarded the area of The Forks as their territory.

2.2 Contact Period (1737–1821)

The Forks area was used during the 18th and early 19th centuries by several Native groups, by parties of explorers and by two major fur trading companies as well as by independent traders. The visitations were usually temporary; few long-term occupations have been recorded and few descriptive records exist of these occupations.

La Verendrye, invited to The Forks by the Assiniboine nation, was the first known European to visit the area. During his first visit in 1737, two villages of Assiniboine occupied The Forks; in 1738 ten cabins of Cree were present. Fort Rouge was established in 1738 by M. de Louviere, a compatriot of La Verendrye (Guinn 1980a:33). The fort was abandoned by 1749. Disagreement exists as to whether this site was located on the north bank or the south bank of the Assiniboine River (Coutts 1988:36).

Archival records indicate that the French explorer, Jacques de Saint Pierre, had a winter camp at The Forks in 1752–1753, perhaps at the ruins of Fort Rouge (Coutts 1988:38). Independent Montreal-based traders Bruce and Boyer established a winter camp (1781–1782) in the area. In 1793, McKay reported a camp of Nor' Westers present. Alexander Henry, a partner in the North West Company, reported that members of the company made regular use of The Forks area from 1800 to 1808.

By the turn of the 19th century, despite fear of attacks by the Sioux, several Metis families had settled at The Forks. They worked as commercial buffalo hunters for the North West Company (Guinn 1980a:24; Coutts 1988:8).

In 1810–1811, the North West Company established Fort Gibraltar at The Forks as a provisioning post for obtaining pemmican. The post is described as consisting of nine buildings erected within a square 18 foot-high double bastioned palisade (Robertson 1816:338). The Selkirk Settlers arrived in 1812 and were drawn into the simmering conflict between the North West Company and the Hudson's Bay Company. The situation eventually led to the dismantling and burning of Fort Gibraltar in 1816 by a group of Hudson's Bay Company men and Selkirk Settlers (Coutts 1988:84). In 1817, the North West Company began construction of Fort Gibraltar II, south of Fort Gibraltar I. With the amalgamation of the two companies in 1821, the era of fur trade competition came to an end.

2.3 The Transition Period (1821–1870)

The post-amalgamation period saw further developments to The Forks area. After its take-over by the Hudson's Bay Company, Fort Gibraltar II was renamed Fort Garry. Fort Garry declined in importance when Lower Fort Garry was built in 1832. However, the location of Lower Fort Garry, 30 km down the Red River, was not optimum. In 1835, work began on its replacement, Upper Fort Garry, a limestone walled structure located to the west of the present FRC property (Loewen and Monks 1986:23–26). Buildings at the first Fort Garry had suffered serious damage in the major flood of 1826. After further damage during the flood of 1852, the structures were abandoned (Guinn 1980a:87).

During this period, several attempts were made to establish an agricultural base at The Forks site. In 1836, the Hudson's Bay Company commissioned Captain George Cary to establish an experimental farm. Barns and stables were constructed north of the river junction (Warkentin and Ruggles 1970:192–193). By 1838, only 20 acres were cultivated and by 1841 the farm was abandoned. Cary continued to manage a portion of it as a private enterprise until 1847 (Coutts 1988:131).

In 1848, a group of British Army veterans, the Chelsea Pensioners, were granted land adjacent to The Forks area (Coutts 1988:129). From 1858 to 1860, British Army regulars were stationed at Upper Fort Garry. During their stay, both groups may have used the now-abandoned gardens and fields of the Experimental Farm to grow crops for their own consumption.

A number of events occurred in the latter part of this period which would have major ramifications for the future of The Forks. In particular, the disappearance of the bison totally disrupted the lifeways of the Indians and Metis. This eventually led to political action by the Metis and the Confederation of Manitoba within Canada in 1870.

2.4 Industrialization and Immigration Period (1870–1888)

A major increase in immigration to Western Canada occurred between 1870 and 1888. In 1872, two *immigration sheds* with detached cookhouses were built near the former location of Fort Gibraltar I. A shanty town developed on *the flats* between the west bank of the Red River and the Fort Gibraltar I area. The shanty town disappeared by 1884 and the immigration sheds by 1885. Archaeological evidence of these events may be located during future excavations.

Three industrial sites were constructed in The Forks area between 1870 and 1888. Two were Hudson's Bay Company developments. One of these was a warehouse complex (Steamboat Warehouse or Warehouse #4), built on the north bank of the Assiniboine River in 1872. The structure was moved 120 feet back from the river in 1877 and was demolished in 1895. The other Hudson's Bay Company development was a large flour mill complex. The mill was built in 1874 and associated structures (sheds, warehouses) were added until the complex consisted of nine

buildings. It was demolished in 1907 (Guinn 1980a:142–143). The third development, the The Clarke and McLure Lumber Yard, was located in the central portion of The Forks, and operated from 1876 to 1890.

2.5 The Railway Period (1888–1988)

In 1888, a charter was granted to the Northern Pacific and Manitoba Railroad. That same year, the Hudson's Bay Company sold 20 acres of land to the railway for $10,000 (Guinn 1980a:135). The site of Fort Gibraltar I was located within these 20 acres. This property remained under railway control until the area was transferred to Canadian Parks Service and The Forks Renewal Corporation in 1988.

The Northern Pacific and Manitoba Railroad began construction of two buildings in 1889. A large repair shop and roundhouse were built north of the junction of the Red River (Guinn 1980b). The roundhouse was demolished in 1926 but the repair shop, known today as the B&B Building, still stands. This structure is located just to the southwest of the Fort Gibraltar I excavation areas.

For the past century, the railway has been the dominant industry at The Forks. The excavation area has been affected by this railway activity, either as an active area of railroad-related work or as a dumping ground for the by-products of railway activities (cinders, ash and refuse). The use of large quantities of coal-derived cinders as landfill has provided a thick layer (up to 2 m) which has served to protect heritage resources from disruption.

3.0 FORT GIBRALTAR I OPERATIONS 1990

3.1 Introduction

Since the 1984 Parks Canada excavation (Priess *et al.* 1986) at the Fort Gibraltar I location, major changes to The Forks area have occurred and the site surface surrounding the preliminary archaeological operations has been altered.

By 1989, the transition from a former railyard to a fully-developed National Historic Site had taken place. Under Canadian Parks Service jurisdiction, considerable landscaping, grooming and sodding has occurred in the area. Concurrent with the landscaping, fences, paths, gardens and stone monuments have been erected in the general area of the previous work. All evidence of the archaeological operations conducted in 1984 has been obliterated by this redevelopment. FRC property west and south of the National Historic Site has remained undeveloped. Grading and surface clearing were ongoing in areas adjacent to the lands under federal jurisdiction during the 1989 field season. Sodding of these areas occurred in September of 1989.

3.2 Operation Location

3.2.1 1989 Project

Determining the location of the 1984 archaeological operations was of prime importance within the overall 1989 excavation strategy at Fort Gibraltar I. In consultation with Peter Priess, the Canadian Parks Service archaeologist in charge of the 1984 excavations, measurements were taken from the northeast corner of the B&B Building standing to the southwest of the general site area on FRC property, and using maps produced after the 1984 season (specifically 21K-84-107D11 Sheet 1), the eastern perimeter of these earlier operations was approximated.

The 1989 plan called for the excavation to be laid out contiguous to the 1984 operations (Figure 2). Some overlap was planned so individual excavation units from 1984 might be identified, allowing integration of data from the two projects.

To this end, a backhoe operator was engaged and a short trench was excavated. Based on the surface survey, it was expected that the trench would cut across the north-south axis of the eastern edge of the 1984 operation. This proved successful; the edge of the 1984 excavation was relocated with little difficulty. Since the 1984 excavation had been covered with Geotex fabric and the backhoe operator was highly skilled in removing small amounts of fill, the fabric was uncovered with no

damage to the underlying units. This initial trench was then widened to permit further access to the previous excavation units and make possible accurate identification of the location of the trench in relationship to the 1984 operations.

After removal by hand of the fill atop the fabric, a portion of the Geotex was pulled back. The strings and nails used to delineate the 1984 units were present although no unit identification could be immediately determined.

With the orientation of the 1984 operations now re-established and the location of the 1989 work limited by some of the landscaping features previously noted, a rubber-wheeled Drott was engaged to remove the fill and overburden in the area designated for the 1989 Pilot Public Archaeology Project at The Forks.

3.2.2 1989 Overburden Removal at 21K (Fort Gibraltar I)

From the late 1880s until 1988, the majority of The Forks land had been a railway yard and had been used as a dumping ground for ash, cinders and other debris. The railways first used the fill to level the area and raise it above annual flood level and later to simply disperse the tons of ash and cinders produced by coal-fired steam generated power. The depth of this overburden was found to range between 1.25 m and 1.50 m.

In 1989, the railway fill was removed as a single archaeological operation. Under the Canadian Parks Service archaeological recording system (Parks Canada 1977) this work was designated 21K50A99. Only selected diagnostic artifacts were retained from the recoveries made during the loading of the overburden into a dump truck. These artifacts were catalogued sequentially. Bottles, earthenware jugs and ceramics were kept to provide a general sample of material from the operation. Non-diagnostic artifacts—such as discarded rails, ties, window glass and masses of scrap metal—were loaded with the cinders into the truck and removed. The excavated overburden was stockpiled for re-use as infill for the excavation area at the end of the 1989 field season.

The end result of the fill removal operation was a prepared excavation area roughly 6 m north-south and 9 m east-west dug to a depth of 1.25 m. A 0.25 m veneer of fill was left above the original buried ground surface to provide protection to the underlying archaeological deposits during further site preparation.

The excavation area had slightly inwardly sloping walls to prevent slumping of the unconsolidated cinders and fill into the excavation. All walls were shored with pressboard and re-bar. This structure provided a valuable service as it prevented edge materials from falling into the unit, especially as the walls dried during the course of the summer. Equally important, the shoring protected both the staff and the volunteers working at the site from the jagged edges of the cinders, wood and metal scraps protruding from the unit walls.

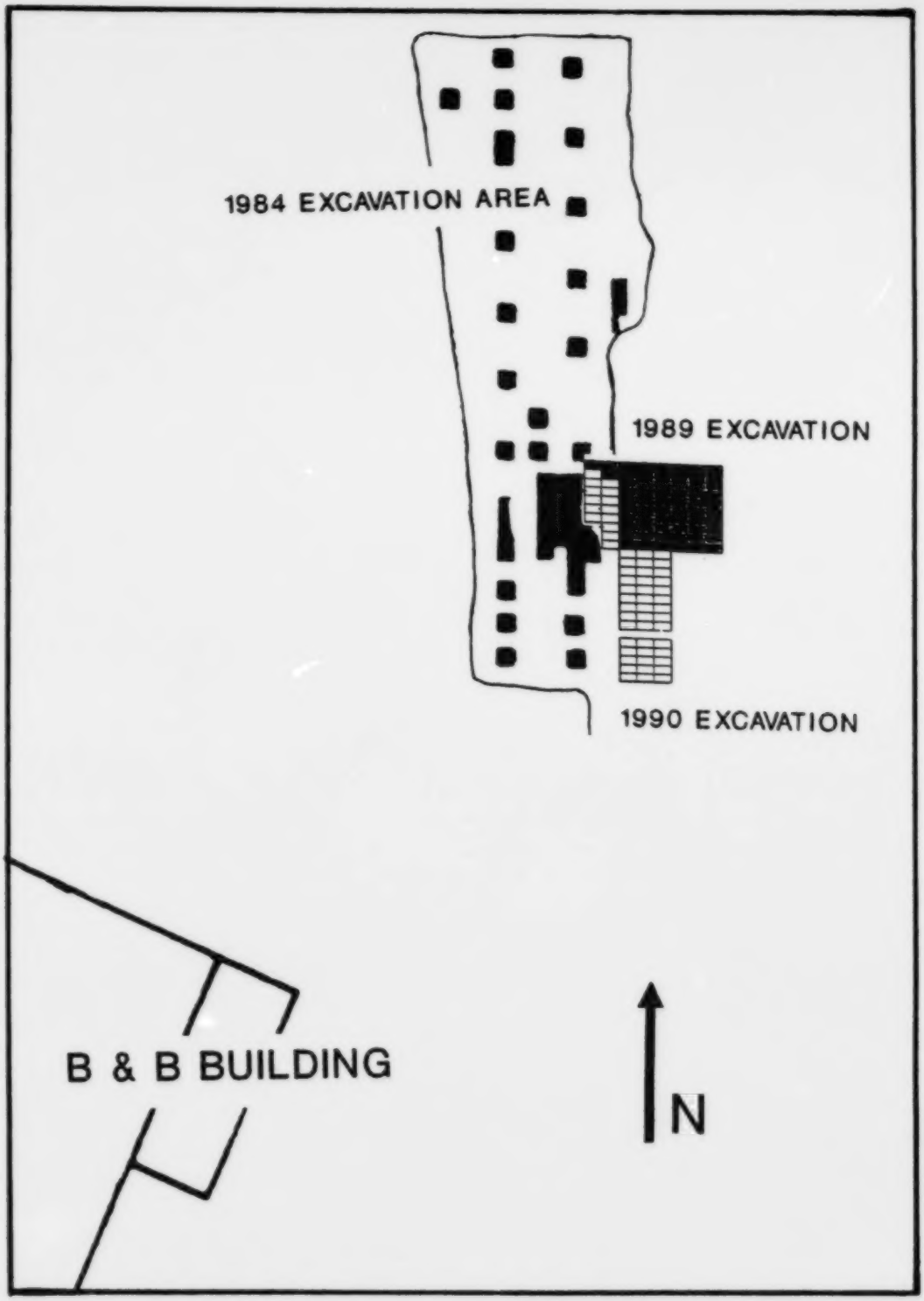


Figure 2: Map of Fort Gibraltar I Excavations

After the general sub-surface site preparation was completed, a datum point was prepared. The location was based on the northeast corner of sub-operation 21K6M(NE) of the 1984 excavation. It was felt that by using this strategy, comparison between the two excavations would be simplified. Any final interpretation of the site, which might be several seasons in the future, would benefit from this integrated approach.

Finally, the 1989 *operation* and *sub-operation* units were surveyed into the excavation area from north to south and east to west. The resulting floor plan for the entire site area consisted of sixty 1.0 m x 0.5 m sub-operations in the excavation area. Three units on the western edge were subsequently opened to join with the 1984 CPS work (Figure 3).

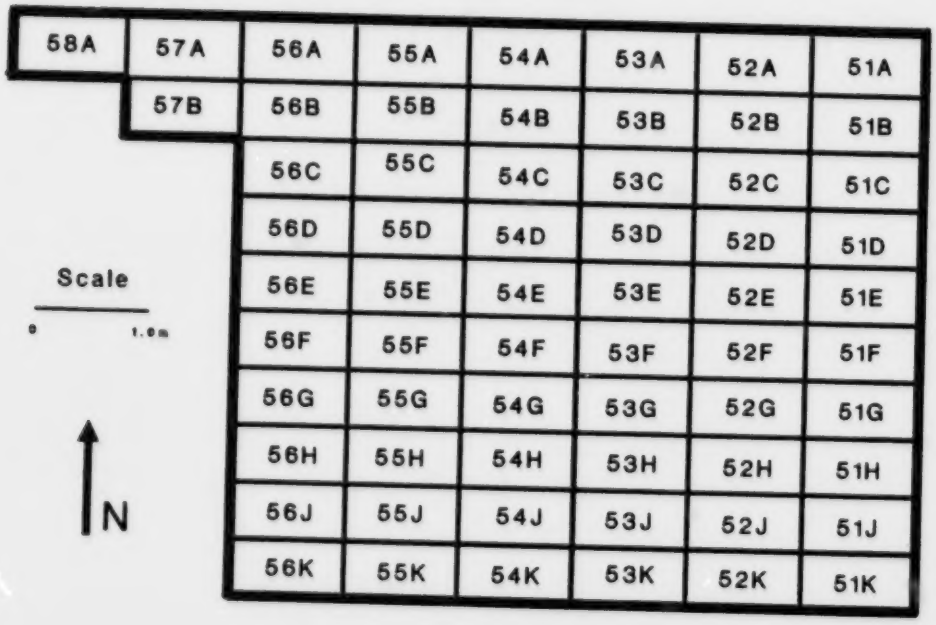


Figure 3: 1989 Excavation Floor Plan

3.2.3 1990: Re-opening the 1989 Excavation

A rubber-wheeled Drott was used to remove the fill that had been dumped into the 1989 excavation over top of a layer of straw bales and plastic. Since the crew did not know if the straw and plastic had sufficiently protected the units, everyone was relieved when the units were found to be in a state of excellent preservation. Aided by the Drott, staff removed the straw and plastic by hand and shovel (Figure 4). The straw bales were dry except for a few in the southwest corner of the site.

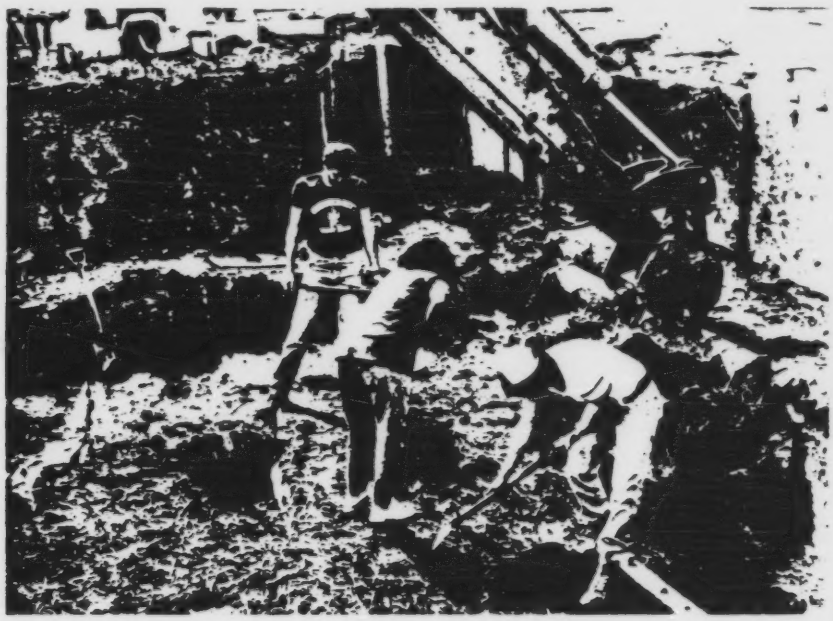


Figure 4: Re-opening the 1989 Excavation

Additional overburden was removed along the western edge of the operation to allow for the future excavation of sub-operations 57C to 57K. This would provide the link with the 1984 excavation.

The shoring and re-bar left in place at the close of the 1989 field season helped to ensure that the excavation perimeter walls did not collapse. More shoring was added to the east, west and south walls. The excavation units were prepared for the 1990 field season by clearing excess soil and straightening the walls with shovels and trowels.

3.2.4 1990: Site Extension

After five weeks of excavation it became necessary to expand the site. The options were to enlarge the area eastward or southward. The size of the expansion was constrained to the east by park shrubbery and to the south by the park fence. Since few artifacts or features were being found in the northern units or in the eastern three metres of the original excavation, it was decided to extend the new excavation area to the south, commencing with the 54 operation grid line and extending westward as far as the 58 operation. This area was also determined by the size of the tent, which would be moved over the new unit.

Railroad overburden, extending horizontally approximately 10 m south and 7.5 m west, was removed by a Drott. The park's pressurized irrigation system was accidentally cut by the Drott bucket and was rerouted around the excavation area once the fill removal was completed. The fill layers overlying the B&B Construction sand levels were excavated and stockpiled off-site for infill at the end of the field season.

Pressboard shoring and re-bar were placed around the walls of the site extension (Figure 5). The tent was then moved and placed in a north-south orientation over the area. A plastic tarp was attached to the north end of the tent and provided protection for the ongoing excavation in the western half of the original site. The walkway, which had extended along the north wall of the old excavation area, was moved to the west wall of the new area. The stairs leading into the excavation were shifted to the southwest corner at the end of the walkway.

Sub-operations extended eastward from 54L to 56L and southward nine metres (Figure 6). This southward extension necessitated the assigning of new operation numbers 64, 65 and 66, since the maximum sub-operation of "Y" had been reached (i.e., 54Y, 55Y and 56Y). The Geotex fabric covering the 1984 CPS sub-operations 21K4Y, 21K6A, 21K6E and 21K6H was revealed along the western edge of the new area. Future excavation should involve the linkage of these units.

3.3 Enclosing the Excavation Area

Concurrent with the sub-surface preparation of the site, the crew erected a 30 foot x 36 foot, free-standing Weatherhaven tent (Command Model) over the excavation area. The tent, on loan from Canadian Parks Service, had been used during the 1989 Pilot Public Archaeology Project at The Forks.

The covering of the site was considered vital for several reasons. First, the site was to be excavated by staff-assisted participants who had registered for short, specific periods of time; it was essential that these people attend and work on their assigned days. Second, most of the available positions had been booked very early in the project, and it was not always possible to reallocate individuals to another time slot. Thus, participants had to work during the time slotted for them or they would lose the opportunity to participate until the following field season. Third, it was

Figure 5: Installing Shoring in the 1990 Extension

important that no working days be lost due to poor weather. Finally, the covered site would make excessive heat, rain, wind or snow less of a problem for all involved.

Since the tent protected the site from the elements, it was unnecessary to uncover and cover the excavation area each day. This allowed the area to be left open for viewing during off hours when no crew were available. Park security patrols were present at all times the crew were off-site. The tent was closed and secured at the end of each day. Despite these measures, minor vandalism occurred in the north-east corner of the site when an individual jumped into the excavation and destroyed part of a unit wall.

The tent and the open excavation area allowed the interpretation staff to provide information and site tours to those visitors who came to see the site when archaeological staff were not present. The project was in operation from Thursday through Monday during the summer. This schedule allowed the public who worked Monday to Friday the opportunity to participate at the site on weekends. Since the site was of greater interest when excavation was taking place and more people came on weekends, visitors could best be served by maintaining these excavation hours. Project staff were on site from 8:30 a.m. to 6:00 p.m. during the entire summer. The shifts for the tour guides were staggered in order to maintain these hours.

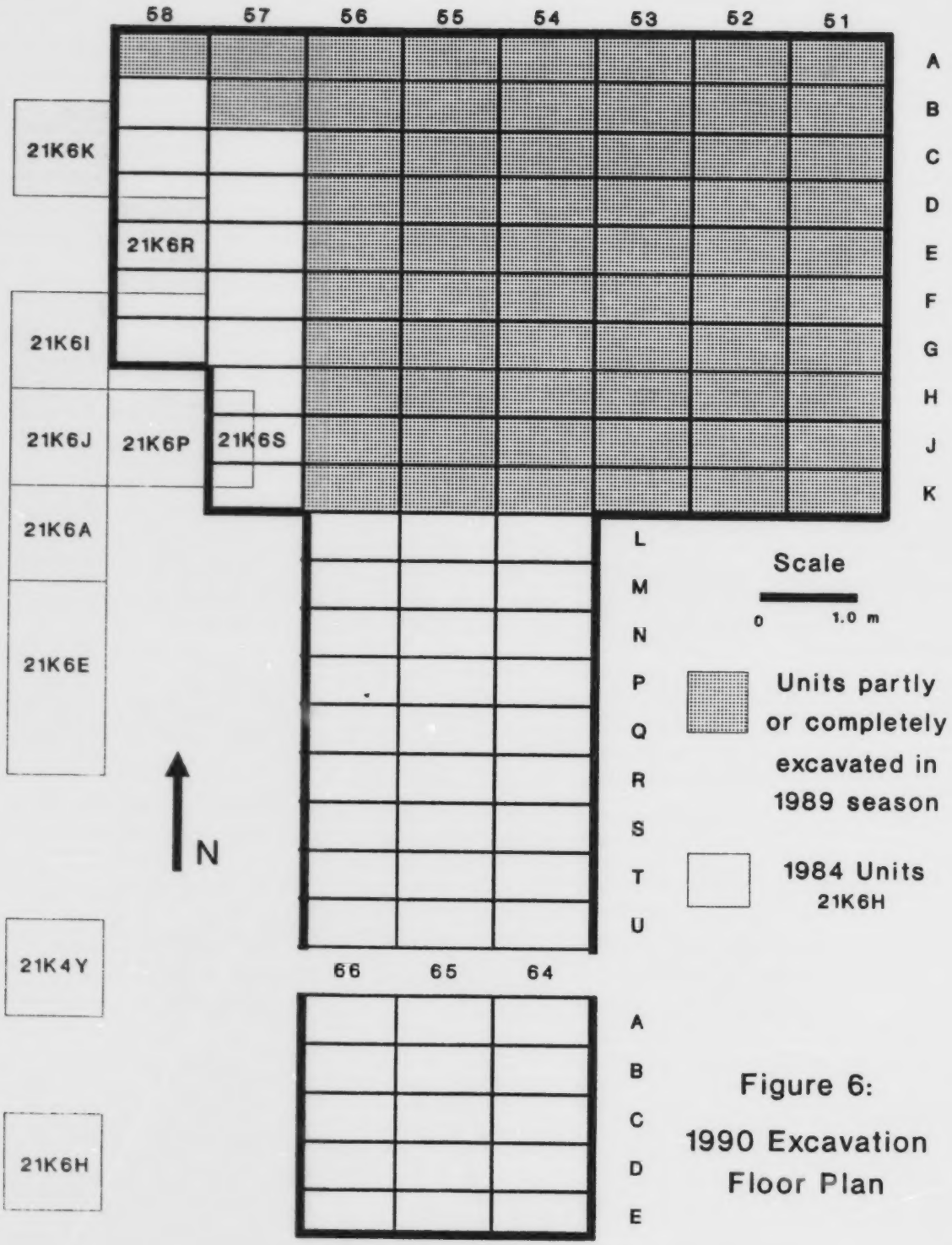


Figure 6:

1990 Excavation Floor Plan

The platforms and walkways, constructed in 1989 and left in place at the end of the field season, weathered the outdoor conditions well. The railings were removed from storage and rebolted to this base structure. The viewing platform and the wheelchair-accessible ramp were situated in front of the west door of the tent, at the edge of the main walking trail along the western boundary of the park. An interior walkway ran along the north side of the excavation. Vistors were encouraged to view the site from these vantage points and listen to the site interpretation provided by staff members. Groups that had assembled at the eastern door of the tent during times when it was open for ventilation were asked to come around to the western door. This was important since the eastern end of the excavation had no protective platform or railings.

There were times, especially on weekends, when the platform at the front of the tent (Figure 7) and the interior walkway could hardly hold the hundreds of site visitors. It did, however, permit 40 to 60 visitors to watch the crew at work and allowed the interpretation and excavation staff a much better venue to explain their work. During the summer, many visitors spent several hours leaning on the railings of this walkway.

After expansion, the central walkway system was relocated within the new position of the tent. In addition, snowfencing was used to completely enclose the excavation perimeter to eliminate hazard for visitors to the project.

Figure 7: Visitors Viewing Project

Although all visitors could get close to the work and have a good view of all activities being undertaken inside the tent, the platforms and walkway closed off the site interior from any unwarranted intrusion. There was only one access point to the sub-surface operation area and few people felt compelled to try and enter the units if their view was poor. In fact, the aboveground nature of the facilities provided a broader view of the activities. Without these facilities, the staff and participants would have been overwhelmed by the hundreds of weekend visitors.

The high visibility of the tent, coupled with signs directing visitors to the excavation area, were readily identifiable features for any visitor returning to the site, and for first-time visitors who had been told of the project by friends and family.

3.4 Outside Excavation Activities

Screens, placed in storage at the end of the 1989 field season, were retrieved and cleaned. Wooden pallets were placed on either side of the screens in order to provide an elevated, less muddy surface to stand on while water screening (Figure 8). As the field season progressed, mud built up in the screening area and it became necessary to add one or two more pallet layers. Water run-off channels were created to direct water away from the screening area and a constant effort was made to keep these channels open. Nevertheless, many participants ended up wet and muddy after a day of work.

By using the old road on The Forks Renewal Corporation property as the dry-screen and water-screen area, the wood post and chain fence along the park boundary could be used to separate the visitors from the working personnel. People generally assembled along the fence rather than crowd around the screens. The excavation crew, one of the experienced participants or one of the tour guides would explain the process of, and reasons for, screening. Recovered artifacts were taken to the visitors rather than having the visitors come to the screens. Since many of the participants were young, enthusiastic and working with hoses, the fence separation also prevented water from being accidentally sprayed on some of the visitors.

Figure 8: Françoise and Raphael Tetrault at the Water Screen

3.5 Site Excavation Methodology

The archaeological methodology used at The Forks Public Archaeology Project in 1990 followed conventional techniques of data retrieval from a multi-strata site area. The site was excavated in natural levels following procedures detailed in the *Parks Canada Archaeology Manual Volume I: Excavation Records System*, published by Parks Canada in 1977. These excavation techniques and procedures allow for a system-wide approach to all archaeological excavations conducted on Canadian Parks Service land or on sites excavated under its direction.

Using this methodology, the excavation area is defined as an operation, with individual units defined as sub-operations within the excavation proper. Sub-divisions of the sub-operation are identified as *lots* and are the smallest divisions within the system. Lot numbers may be assigned to soil layers, individual artifacts, clusters of artifacts or samples. Lot numbers are also assigned to the whole or parts of what elsewhere might be known as *features*. Although general rules apply, the rationale for assigning a lot number can vary from excavation to excavation and from archaeologist to archaeologist, depending on the conditions at the site in question.

The 1989 excavation area had been divided into four, almost equal, quadrants. The northeast corner of sub-operation 21K54F was the centre. For the 1990 field season each field assistant was assigned a quadrant in order to increase his/her familiarity with a specific portion of the site. This eased confusion both during excavation and in the collation of data such as lot summary forms and level drawings. Knowledge of the other quadrants was gained when the field assistants rotated as data management officers.

When the excavation was expanded, the two field assistants who had been working in the eastern quadrants were assigned new areas in the extension. These areas were at the south end and in the northcentral portion. Each area was approximately 2 m north-south by 3 m east-west.

All excavated soils were wet-screened using ordinary window screens and a pressurized hose system. The exception was large amounts of chinking recovered from a concentration in the northwestern part of the site (Feature Q). This chinking was dry-screened through ¼" mesh shaking screens.

All artifacts were collected and bagged following the directives in the *Parks Canada Archaeology Manual*. These artifacts were then removed to the on-site laboratory and processed, again according to CPS inventory format. Photographs were taken using conventional archaeological procedures and recorded according to the Parks Canada system. The *Manual* should be consulted for further information regarding excavation procedures.

3.6 Laboratory Procedures

Although laboratory procedure in 1990 differed little from that in 1989, laboratory facilities were augmented by the addition of a third trailer. In 1989, two trailers housed lab facilities, field equipment and a kiosk. The larger trailer served as a combination kiosk/"dry" lab, with washing and cleaning activities relegated to the smaller "wet" lab. Although this arrangement worked well, lab staff had to divide their time between the two trailers and were not always "on the spot" to answer participants' questions immediately.

The addition of a third trailer in 1990 enabled all lab facilities to be combined under one roof. This proved a more satisfactory arrangement for both participants and staff. They were able to work consistently side by side, with supervisors always on hand to answer questions and demonstrate lab procedures.

The procedure for processing artifacts in 1990 remained largely unchanged from that of the 1989 season. Large *unit bags*, each labelled with the provenience corresponding to a single excavation unit, were placed along one wall of the field or equipment trailer. Artifacts from each level were brought in from the excavation in labelled field bags and placed into the corresponding unit bag. From here, the field bags were taken to the lab trailer, where the artifacts were washed or dry-

brushed depending on the material. Although materials like glass or glazed ceramic are generally not harmed by contact with water, rusty metal, fragile wood and faunal remains and chinking are adversely affected and were therefore cleaned using only a dry toothbrush. Extremely delicate artifacts like cloth, leather and paper were not cleaned, but were refrigerated prior to transportation to Canadian Parks Service labs for conservation treatment. To ensure that small artifacts were not lost in the cleaning process, all field bags were emptied into fine mesh sieves prior to cleaning. These bags, with provenience recorded on them, were then placed onto ¼" mesh drying racks. To maintain the link between recovered artifacts and the recorded provenience, labelled on the field bags, the cleaned artifacts from each bag were placed upon the bag itself.

After the artifacts had dried, participants sorted them into classes defined by Canadian Parks Service for archaeological materials (Parks Canada 1982). These artifact classes are a combination of both material and functional types. For example, all bone and shell is contained in the class *fauna*, but glass is divided into *Window Glass* and a second, more general class of glass containing items from glass bottles to railway signals. All beads, regardless of material, are contained in a separate class. The CPS artifact classes used were: *Glass, Window Glass, Historic Ceramics, Smoking Pipes, Nails, Fasteners, Metal (General), Arms and Ammunition, Fauna, Beads, Native Ceramics, Lithics, Worked Bone, Miscellaneous Organic* and *Miscellaneous Inorganic.*

Artifacts of each class were then placed into plastic artifact bags. Participants recorded class, quantity, weight and provenience information on a card and placed the card into this artifact bag. This initial stage of analysis is called *primary sorting.*

Primary sorting was followed by *secondary sorting.* At this stage, artifacts received a more detailed examination, necessitating close supervision by laboratory staff. Artifacts which had previously been lumped together under a single artifact class during primary sorting were separated, examined individually and numerically coded in preparation for data entry. Lab staff helped participants identify artifacts and assign codes which best described the artifacts. For the highly motivated participant who wished to try his/her hand at detailed artifact identification, a wide range of reference manuals and a microscope were available (Figure 9).

Broken artifacts were reconstructed whenever possible. This usually applied to glass and ceramic sherds. White glue was used to bond the sherds together; the mended piece was then placed into a tray filled with sand to stabilize it until the glue was dry.

All participant work was checked by lab staff prior to computer data entry, the final stage of on-site artifact analysis. Data entry was performed by lab staff. This provided a final checkpoint to identify and correct any errors that may have been made. At this time a sequential inventory number was assigned to each artifact, prefixed by both the artifact provenience and, in lieu of a Borden Number, the CPS

Figure 9: Pat Walker Examining Small Artifacts

site designation 21K. For example, artifact number 6195, a shell bead, receives the descriptor 21K54U2. This tells us that the bead came from level two, in unit 54U, on site 21K (The Forks).

As in 1989, the data management system utilized was the Canadian Parks Service program DOSSIER, developed for use on archaeological sites. The program uses numbered codes that correspond to artifact attributes for each artifact class. Data was entered using a PC AT with a 40 megabyte hard drive and 640k of conventional RAM. Inventory number, provenience and general artifact information were recorded on 3" x 5" inch fanfold cards generated via the ANALYSIS cardmaking program on a 9 pin dot matrix printer. These cards were then placed into the plastic artifact bag. All artifacts were stored in closed 28 cm x 15 cm cardboard boxes for further post-season analysis.

3.7 Site Orientation of Participants

The Forks Pilot Public Archaeology Project in 1989 was a learning experience for the participants, both staff and volunteer. Although all of the staff had varying degrees of experience in public archaeology, they were not prepared for the intensity of the 1989 field season. In fact, in a manner similar to the volunteers, they learned much from on-the-job experience.

Few archaeologists are trained teachers and most archaeological excavations are conducted using a professional staff and crew. The challenges faced by the staff of the project were to conduct an excavation that would maintain professional standards and to provide participants with a training session in archaeological theory and procedure that was both educational and enjoyable (Figure 10).

Six of the professional staff who had been employed during the 1989 project returned for the 1990 field season. These returnees provided continuity to the project and were able to help the new personnel become acquainted with daily operations.

As many of the participants had little previous experience in archaeology, it was necessary to familiarize them not only with site specifics but with all other aspects of archaeological work. They were apt students and demonstrated intense concentration while excavating (Figure 11).

Participants registered for one to three days and learned the basics of archaeological theory and procedure in short but intense lecture sessions. This training was augmented with on-the-job instruction. A number of returning participants (alumni of the 1989 project) worked with new participants. These repeat participants were able to share their experiences with the newcomers and required less of the project archaeologists' time. The archaeologists, in turn, had more time to spend with the new participants. This allowed for an intensive and individualistic relationship between archaeologist and participant.

Each morning, staff decided upon the day's work strategy. The numbers and the ages of the incoming participants were discussed; the latter was important in terms of the overall plan for the day. Greater responsibility was generally given to adult participants. On some days, all the participants were young and adjustments had to be made in terms of planned activities for the day.

The program followed the same format each day. Participants worked from 9 a.m. to 4 p.m., with coffee breaks and a lunch break. They were met on-site by the Participant Coordinator, who gave them name tags, explained the daily schedule of activities and escorted them to the laboratory facilities. They were shown where to stow personal belongings and offered a cup of coffee prior to the orientation session. The Project Director began the orientation session with a welcome to the site and explained the purpose and importance of archaeology and the goals of the project. Following this, the staff archaeologists, on a rotating basis, explained

Figure 10: Field Assistant Peter Filopoulos Instructing Young Participants

Figure 11: William Schroeder Excavating

how to use the various tools in both the excavation and laboratory and presented a brief history of The Forks and a general history of Manitoba during the Fur Trade period. Participants were encouraged to ask questions. Following this, all participants were taken to the excavation area. Here, they were shown how to move about in the pits without disturbing surfaces, walls of the units or dividing markers. Current features being worked on were described to the participants along with some of the more interesting artifacts recovered to date. Those scheduled to work in the laboratory returned there and received more specific instructions on cleaning and processing artifacts. All participants paid close attention to the rules of the site and were very careful when in the excavation area.

The keys to the teaching program were (a) taking the time to explain why a procedure was necessary and (b) explaining in detail why it had to be done in a certain manner. Every participant was shown which tools to use in various situations and why certain actions were applicable in some cases and not in others. The participants were also shown how to record the information they recovered (Figure 12). Using prepared summary forms, they noted details about the artifacts they had recovered and the soil layers they had encountered. Staff members were always present to provide assistance. The motto of the staff was "When in doubt, ask questions. That's what we are here for."

Figure 12: Carol Clegg Recording Observations

Although many participants' time at The Forks may be the only archaeological experience they will ever have, alumni will be welcome returnees to future excavations. One of the program's primary goals was to give the participants a positive, fulfilling experience and to further develop their interests in heritage and archaeological concerns.

3.8 Visitor Services

The number of people who visited The Forks in 1989 was much greater than expected. In fact, visitor flow nearly overwhelmed the staff at the beginning of the summer. Because most archaeological projects are not publicized as tourist attractions, it had not been possible to predict visitor attendance. Staff were better prepared for the 1990 field season and knew what to expect in terms of visitors to the site.

Two site interpreters were hired to explain the excavation and the processes that were being undertaken. At times, these staff members were almost overwhelmed when hundreds, and even thousands, of visitors attended the site on a daily basis. Other staff readily provided assistance, giving short lectures and answering questions, on an impromptu basis, in the middle of other activities.

As with the participants, most visitors expressed a genuine interest in viewing, and asking questions about, the work being done. The platforms and walkways around the excavation area and the public access to the laboratory space were often overcrowded on weekends. The high number of weekend visitors sometimes taxed the ability of the crew to adequately explain the program. New arrivals, who had missed part of the lecture, would ask questions about what the rest of the group had already heard. It was impossible for the staff to know who had heard which portion of any previous lecture. For the most part, it is felt the visitors gained a partial understanding of what was happening. It was continually stressed that they could return when there were less people. Many did. A visitors' guest book was available for comments at all times during the season. With the odd exception, the comments were favourable.

3.9 Site Closure

The 1989 excavation area, with the exception of Feature Q (Section 5.3), was completed by the end of the 1990 field season. The 1990 site extension area was not completed by the end of the field season; 29 of 54 designated sub-operations had not been started. Anticipating a return to the site in 1991, the proven site protection methods (used at the conclusion of the 1989 project) were repeated. First, however, a retaining wall of pressboard and 2" x 4" lumber was constructed along the south wall of the original excavation. The wall angled from approximately the southeast corner of 21K56K to the northeast corner of 21K58A (Figure 6). This wall should protect the site extension area from 21K54L southward

and westward. Feature Q is also protected for future work, as well as those surrounding units where the 1984 sub-operations were not excavated below the Fort Gibraltar I flooring levels and chinking.

The shoring and re-bar were removed from the east wall and most of the north wall of the old excavation for use in the retaining wall. The plastic tarp, which had provided shelter over the northwest part of the site and had been subsequently ripped by strong winds, was placed within the excavated units of the new area. Straw bales were then placed tightly together on top of the tarp. Five millimetre plastic sheeting was spread over the entire new operation and held in place with rocks. Straw bales were also placed in the angled area behind the retaining wall to protect Feature Q and its surrounding units.

Fill, which had been stockpiled near the B&B Building, was dumped into the entire site. A backhoe was used to spread the fill over the excavation hole and level it to original ground surface. These procedures should ensure reliable protection of the site and again allow for safe, expedient fill removal when the site is reopened.

At the close of the field season, the tent was taken down, the stairs leading to the excavation area were removed and re-bar, which had been used as snowfencing support and tent tie-downs, were pulled from the ground. These items were returned to CPS for storage.

The Forks Renewal Corporation again granted permission for the use of the B&B Building as a temporary storage area and also allowed use of an area of the Johnston Terminal for laboratory furniture storage. The walkway and ramp railings were unbolted and, along with the screens and wooden pallets, stored in the B&B Building.

The rented laboratory and kiosk trailers were cleared out and the equipment and retail products within were returned to their providers. The compound was cleared and the infilled excavation area left bounded by the ramp and walkways in preparation for future projects.

3.10 Site Facilities

The following is a description of the site facilities developed and/or used for the operation of the Public Archaeology Project at The Forks during the 1989 and 1990 season. This section is included to detail the types of facilities necessary to mount a program of this nature in an urban area during a summer field season. Different settings, sites and local conditions would require different facilities. The following provides an indication of the support systems needed to pursue such an undertaking.

The Forks Public Archaeology Program was fortunate to have the support of a number of agencies from which much of the material needs of the project could be drawn. Where major logistical or material support was given, the agencies that provided them are noted.

3.10.1 Excavation Area

An all-weather, free-standing Weatherhaven tent was used to enclose the excavation area. Such a structure is necessary to prevent inclement weather from creating participant scheduling problems. The tent also provided perimeter control for site visitors, enabling the staff to channel the public at key access points to the excavation.

Walkways, wheelchair-accessible ramps and railings surrounded the excavation area. Architectural plans for the ramps and walkways had been designed and contracted out to a local construction firm in 1989. Such facilities are necessary to allow access to the program for the greatest possible number of individuals. Good viewing facilities reduce problems created by visitors trying to gain access into the excavation area or blocking the workers from performing their tasks. Since these facilities were built on public property and members of the public were invited to the area, access components had to be professionally designed in accordance with safety regulations.

The rough edges of the excavation area were shielded by a shoring of pressboard and held in place by re-bar sunk into the ground. While shoring was not legally required, it prevented accidental injuries to staff and public participants.

3.10.2 Screening Area

All materials from the excavation at Fort Gibraltar I were either wet- or dry-screened. These activities recover much of the small artifact material from an excavation and are of great interest to the general public. An area large enough to accommodate a number of viewers and far enough away from the excavation component to prevent visitor overlap was developed. This reduced the problems encountered by two interpreters providing explanations of different archaeological processes. Since water-screening can create drainage problems, the area was downslope from the excavation and from the area where visitors gathered to watch. The screening area was situated adjacent to the other components of the project, but with consideration of the topography so that visitors did not have to walk over soggy ground to view the rest of the operations. The 1990 excavation had access to the pressurized water and irrigation system of the Forks National Historic Site. Dry-screens were provided by HRB.

3.10.3 Laboratory Facilities

Three trailers were located adjacent to the excavation in a secure compound. One contained a kiosk (Section 8.4) and one functioned as a secure storage area for personal belongings and field equipment. The third and largest trailer contained laboratory facilities. All three trailers were fitted with approved public-access stairs and handrails.

All artifact analysis and processing was performed in the laboratory trailer, where participants washed, sorted and identified artifacts under staff supervision. Drying racks, a microscope, reference materials and an electronic weigh scale were all available to aid in artifact analysis. Information on the recovered artifacts was stored on an IBM AT computer located in the lab. The CPS program DOSSIER, developed for classification of archaeological material, was used.

Visitors were encouraged to enter the lab, examine artifacts and ask questions regarding lab operations. Because of the limited trailer space and small number of lab staff, large tours were divided into smaller groups to view laboratory processes.

A telephone, installed in the lab for both staff and public use, was invaluable in the coordination of Public Archaeology participants.

3.10.4 Washrooms

The public facilities of the Canadian Parks Service National Historic Site were used by the crew and visitors. Arrangements were made with Canadian Parks Service to open and close these facilities according to the program schedule. These were important during the latter phase of the program after the park facilities were closed for the season.

4.0 STRATIGRAPHY

The stratigraphic layers throughout the site have been grouped into four basic, distinct time periods represented by five events. These events, maintained during the 1990 field season, are:

a) the Railway Period (1888–1988);
b) the construction of the B&B Building (1888–1889);
c) the Pre-Railway/Post-1826 Flood including the Hudson's Bay Company Experimental Farm (1836–1848);
d) the 1826 Flood;
e) the Fur Trade Period including Fort Gibraltar I (1810–1816).

Numbers were assigned to the stratigraphic layers as a means of standardizing descriptions and establishing a chronological sequence to help describe both the natural stratigraphy and the cultural events. In contrast, letters were assigned to the features to distinguish them from soil layers. Descriptions are provided in Section 5.

Nine additional stratigraphic layers, all associated with the Fur Trade Period, were identified during the 1990 field season. Combined with the 29 layers defined during the 1989 field season this has produced a total number of 38 layers. Many of these layers occur in association with features and are described in detail in Section 5. Figure 13 describes the various layers. Determination of the layer/event relationship (i.e., the soil layers which relate to specific cultural events) is a step in the explanation and interpretation of the site. The sequence of soil layers can be relatively simple as in unit 21K64B (Figure 14). Conversely, they can be quite complex where features are present, such as in unit 21K55J (Figure 15).

The area of The Forks has been affected by numerous floods over the past millenia. Every stratigraphic profile does not have evidence of each and every flood event. During the 1989 excavation, evidence of the 1826 Flood was recorded. As noted elsewhere in this report, however, the 1984 excavation found evidence of other floods that occurred in 1852, 1861 and 1882. Further excavation and linkage of the two operations will make it possible to explain these stratigraphic differences.

The flood soils are defined as a Cumilic Regosol horizon. The soils are "a comparatively unaffected recently deposited river alluvium, granular and friable, varying from loam to silty clay in texture, neutral to mildly alkaline in reaction, dark layers of buried organic residues deposited on former surfaces" (Manitoba Agriculture n.d.:31). The organic matter usually decreases irregularly with depth. Regosolic soils are generally weakly developed, lack genetic horizons and consist of primarily pure quartz sand. These characteristics are due to a number of factors, including general climatic conditions and the instability of the material, which is recently deposited alluvium.

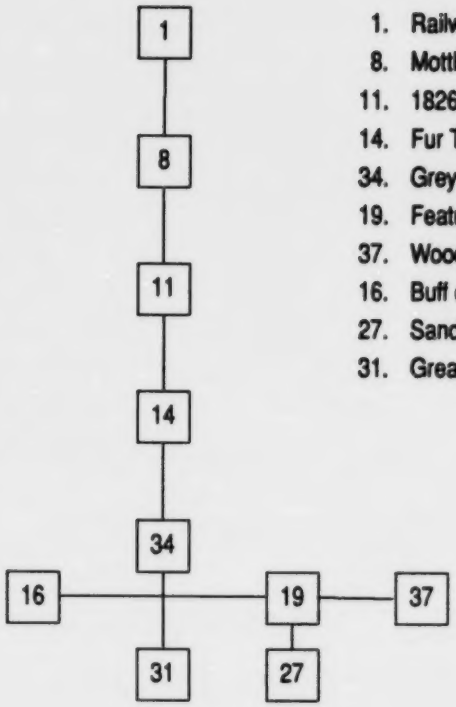
Railway Period	1	Railway fill including cinders and gravel. This is the top stratigraphic layer throughout the site. It underlies landscape material (i.e., sod)
	2	Orange-dark brown stain (leaching from cinders) consists of fine particles of cinder and coal dust. Stain extends into upper surface of underlying stratum
B&B Building	3	Construction sand, tan to buff (coarse grain)
	4	Construction sand with some inclusions of Australian Camouflage sand
	5	Australian Camouflage sand; mottled mixture of sand of different colours and textures in patches of brown, yellow and buff
	6	Buff coloured coarse sand, with small pebbles
	7	Australian Camouflage clay; mottled appearance with patches of brown, yellow and buff. Clayey in texture
Pre-Railway/ Post-1826 Flood	8	Mottled clay, dark brown to tan
	9	Tan-buff clay, swirly patterned
	10	Brown coloured clay with organic stains
1826 Flood	11	1826 flood sands, yellowish in colour
	12	Flood sands with embedded lenses of tan clay
	13	Buff coloured sandy clay

Figure 13: Description of Soil Layers

	14	Fur Trade Clay—etc.
	15	Buff coloured silty sand
	16	Buff coloured silty clay
	17	Silty clay with brown organic stains
	18	Grey-brown clay with clusters of beads and shot
	19	Clusters of chinking, charcoal and wood
	20	Clusters of red chinking
	21	Organic brown lens
	22	Light grey ash pockets
	23	Grey-brown clay
	24	Brownish-grey clay
	25	Pockets of charcoal, bone and shell
	26	Organic lens with black charcoal
Fur Trade	27	Light brown clay with sand patches
	28	Greasy, dark grey clay with cracks resulting from either freezing or drought
	29	Brown clay with silt inclusions
	30	Greyish-brown silty clay, swirly patterned
	31	Greasy, dark grey-green clay
	32	Mottled grey silty clay
	33	Grey clay
	34	Grey-green silty clay
	35	Orange chinking
	36	Carbon stained flooring
	37	Wood/timbers
	38	Chinking, charcoal and ash

1. Railway Fill
3. Construction sand
5. Australian Camouflage sand
8. Mottled clay, dark brown to tan
10. Brown coloured clay with organic stains
11. 1826 flood sands
14. Fur Trade clay, silts with organic stains
38. Chinking, charcoal and ash feature

Figure 14: Schematic of a Simple Soil Sequence



1. Railway fill
8. Mottled clay, dark brown to tan
11. 1826 flood sand
14. Fur Trade clay, silts with organic stains
34. Grey-green silty clay
19. Feature of chinking, charcoal and wood
37. Wood/timbers
16. Buff coloured silty clay
27. Sandy clay
31. Greasy, dark grey-green clay

Figure 15: Schematic of a Complex Soil Sequence

4.1 Railway Period

In 1989, the uppermost part of the railway fill was removed to a depth of 1.25 m by a skilled backhoe operator, in preparation for laying out the grid. The remainder of the fill in the sub-units was removed by shovel and trowel and designated as 21K50A99. During the 1990 field season, when the excavation was extended southwards, the railway fill was again removed by a backhoe. In most of the units the B&B Building construction sand level was exposed below this fill. The small amount of remaining fill consists of two main stratigraphic layers.

Layer 1: Uncompacted fill of grey, black and red cinders and gravel covering the entire site.

Layer 2: Orange to black leaching from the cinders. The staining appears primarily in the eastern units of the excavation, tapers to the southwest and eventually disappears.

4.2 B&B Construction

Soil deposits associated with the construction of the B&B Building (1888–1889) and contemporaneous with the railway fill period were observed in the western half of the excavation. These strata were present in all new units started this season including those in the 54, 55, 64 and 65 operation grid lines. This represents a more easterly extent than in 1989 (Kroker, Greco *et al.* 1990; Figure 18).

Soil layers 3,4,5,6 and 7 consist of construction sand and clay. They were clearly visible in the western portion of the excavation area.

Layer 3: Coarse-grained construction sand below the railway fill.

Layer 4: Consists of construction sand and inclusions of patches and pockets of clay mixed with charcoal, giving it a mottled appearance.

Layer 5: Designated colloquially as *Australian Camouflage*, it consists of a mottled mixture of brown, buff, tan, grey and black sands that vary in texture. The thickness ranges from 5 cm to 30 cm at the western wall. The stratum tapers, disappearing towards the eastern half of the excavation area.

Layer 6: Coarse sand containing a large number of small pebbles. It ranges in thickness from 2 cm to 18 cm.

Layer 7: Also *Australian Camouflage*, but with a clayey texture. This layer also tapers and eventually disappears. It varies in thickness throughout the units, ranging from minimal to 20 cm.

It is evident these strata are from construction activities rather than from natural causes.

4.3 Pre-Railway/Post-1826 Flood

The levels of deposition of the Pre-Railway/Post-1826 Flood Period occur immediately below the railway fill and/or the B&B Building construction levels. They are consistent throughout the site. The depositions include the levels associated with the Hudson's Bay Company Experimental Farm (1836–1848).

Three different soil layers were identified in most of the units.

Layer 8: Mottled, silty clay (dark brown to tan). This layer is consistent throughout the excavation area and includes charcoal staining, charcoal flecks, chips of wood and pockets of ash and sand. Because of the high clay content, the stratum became extremely hard when dry.

Layer 9: Tan to buff silty clay with some swirl patterning.

Layer 10: Brown organic, mottled, silty clay. There are organic stains and several embedded lenses of charcoal. A quantity of manure, possibly associated with the Experimental Farm, was found within this layer in units 54T, 55S, 55T, 56T and 56U.

In some units, the mottled clay of Layer 8 appears as a greasy black level with extensive staining. In addition, larger pieces of wood, some charred, were excavated from this stratum. Layer 8 grades into the lighter, silty clay of Layer 9 in the western part of the excavation. It gradually dips towards the east and has a decreased density of artifacts, some pieces of chinking and patches of organic stains.

4.4 1826 Flood

Deposition of thick layers of sand require the presence of large-scale, rapidly-moving flood waters that are suddenly slowed. A major flood, known to immediately pre-date the Experimental Farm, occurred in 1826. The deposits left by this flood are as follows.

Layer 11: Yellowish flood sands. The stratigraphic position of this layer, below the plow zone of the agricultural period and above the Fur Trade strata, confirms the designation of this sand level as representative of the 1826 Flood. This stratum provides an excellent control for the separation of the stratigraphic deposits at the site. The thickness of this layer ranges from minimal to 30 cm. It is thickest in the western units, tapering to only a few grains in the eastern units.

Layers 12 and 13: The fine lenses of sands and silts have a swirled pattern, and in most of the units include discontinuous tan clay or buff coloured sandy clay lenses, 1 cm to 2 cm thick, as well as charred and calcined bone, charcoal specks and shell. Patches of brown organic material and decayed wood were also recovered. These lenses of artifacts are the result of secondary deposition and could have been washed in or smeared during the flood.

4.5 Fur Trade Period

Soil layers 14 to 38 pre-date the 1826 Flood. During the 1990 project, excavation continued in units that had not been completed to the base of the Fur Trade Period in 1989. In those units not associated with features (predominately in the eastern half of the site), the stratigraphy consisted of various silty clay layers divided by sterile organic lenses. Few artifacts were recovered from pre-Fort Gibraltar I levels. Soil layers related to features produced most of the Fur Trade artifacts. Below the features, sterile silty clays were encountered.

Layers 14 to 38: The predominate soil (Layer 14), a mottled, dark brown, silty clay with organic stains and patches of olive-grey to tan silt, contains particles of wood and bone fragments. There are several charcoal (Layer 26) and brown organic lenses (Layer 21) at various depths, as well as pockets of sand with ash (Layer 22), clusters of chinking (Layers 20 and 35) and charred wood (Layers 19 and 37).

Most Fur Trade artifacts were recovered from the upper levels of this event or deeper features. The frequency gradually decreased until a sterile soil layer was encountered. This stratum contains silty clay (Layer 16) with some charcoal deposits and could be related to another flood episode. Units were excavated below this sterile layer, resulting in the recovery of additional Fur Trade artifacts, such as beads and shot. Further excavation revealed a sterile tan or mottled grey silty clay (Layer 32) which is pre-Fort Gibraltar I and contained no artifacts.

5.0 FEATURES

Every feature identified during the 1989 field season was further investigated this season. Six additional features, each related to Fort Gibraltar I, were encountered in 1990. The features are discussed according to time period.

5.1 Railway Period

Feature B: Bricks

Excavation of the brick feature continued in 1990. It was first encountered during the 1984 field season and was identified as a railway refuse pit dating to ca. 1889 (Priess *et al.* 1986:84). This feature may have been formed immediately after, during or prior to the construction of the B&B Building. Accordingly, the feature is discussed here within the generalized railway period (1888–1988). Only a small portion of the feature was present, in the north wall of 21K6R, and very little of it was excavated. This location corresponds to the southern part of 21K58D.

Nine bricks were found in the southwest corner of 21K57B, in 1989, and were left in place. This season the feature was fully exposed and excavated (Figure 16). It started below the Australian Camouflage layers and measured approximately 1.5 m north-south and had an east-west diameter of about 1.6 m. A total of 149 complete and fragmented common construction bricks were recovered along with 16 face brick fragments. These artifacts covered the entire surface of 21K58B3, 21K58C3, 21K58D2 and the western portions of 21K57B4, 21K57C3 and 21K57D3 in a semicircular fashion (Figure 17). They sloped inward toward the feature centre in 21K58C. A few clinkers, rocks and a large piece of coal were present among the bricks.

Once the bricks were removed, a large boulder was found to be sitting in the centre of the depression. A metal barrel hoop was located under this boulder in 21K58C. The soil outside the hoop was a greyish-brown clay mixed with rubble fill. The material within the hoop was excavated separately from this bowl-shaped fill and assigned a different lot, 21K58C5. The spatial extent of the fill was primarily the same as that of the bricks.

As excavation of the fill progressed, the outer boundary of the feature became increasingly difficult to delineate. Some mixing with 1826 flood sands occurred in 21K58B. The feature also extended into the Fort Gibraltar I levels, and the fill averaged 35 cm deep in 21K58D.

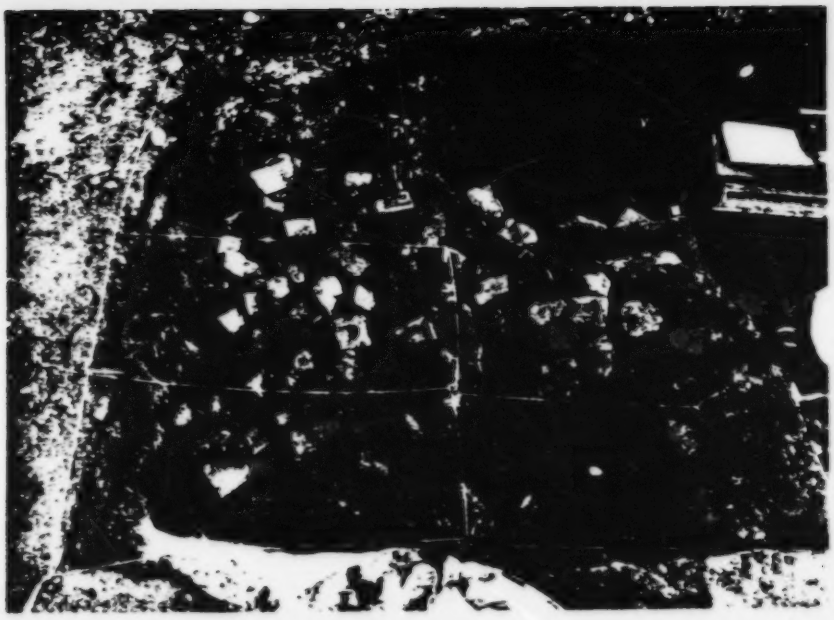


Figure 16: Feature B—Brick Component

A variety of artifacts were recovered from within the barrel hoop including cloth, paper, eggshell, windowpane, bottle glass, fish bones, square nails, a metal button, an iron door latch bar and a large hinge strap. Many items, such as a clay marble, a clay pipestem manufactured by Bannerman in Montreal, shoe leather, buttons, square nails, construction staples, glass fragments, a large lock and faunal remains, were found in the fill surrounding the barrel hoop.

Some of the artifacts could have originated in the Fur Trade levels and subsequently became mixed with the later period artifacts. It is speculated that Feature B may have filled an existing depression which extended to the Fort Gibraltar I levels.

5.2 Pre-Railway/Post-1826 Flood

Feature C: Post Hole

The eastern portion of Feature C was excavated in 1989. It occurred in units 21K56G and 21K56H. Investigation continued in 1990 on this post hole via the opening of units 21K57G and 21K57H (Figure 17). It was uncovered in 1990 at the top of Layer 9, the tan silty clay. The northwest edge of the post hole is along the south edge of 21K57G and extends into the northeast corner of 21K57H. It is located 25 cm west from the east wall and 22 cm south from the north wall. Wood fragments and a

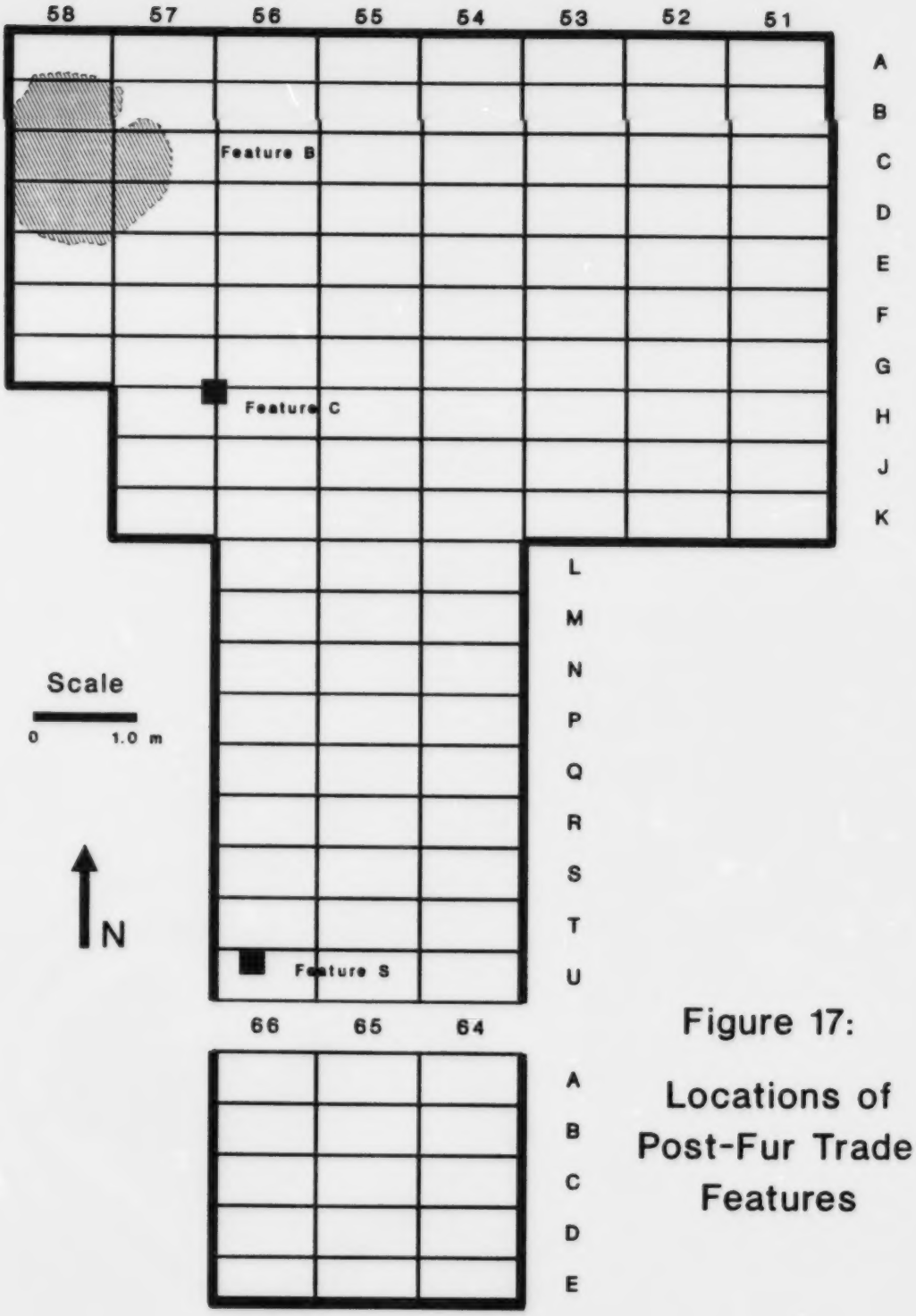


Figure 17:

Locations of Post-Fur Trade Features

square nail fragment were contained within the feature and two glass trade beads were recovered near its base. The feature is 35 cm deep and extends about 10 cm into the Fort Gibraltar I levels. It ends at the top of the chinking and charcoal of Feature I, the cellar depression. The beads likely originated in these lower levels.

Feature S: Post Hole

Another post hole (Figure 18) was located along the north wall in the central area of 21K56U (Figure 17). It commenced at the base of the tan silty clay Layer 9 and extended down to the surface of the Fur Trade Period. This post hole is identical in size (about 25 cm x 22 cm) to the Feature C post hole and is approximately 11 m due south. It also extends through similar soil layers. These post holes could be related to a structure or a fence, possibly post-dating the Experimental Farm.

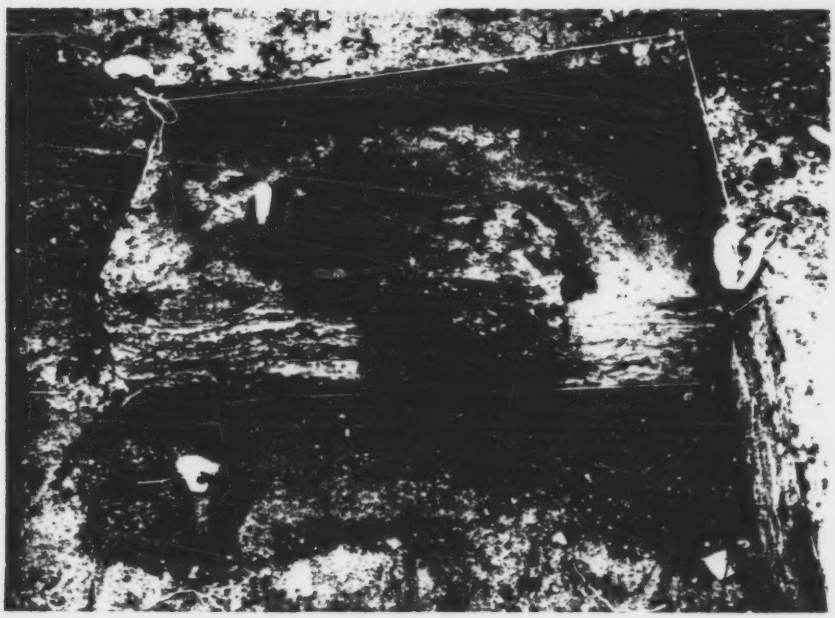


Figure 18: Post Hole (Feature S)

5.3 Fur Trade Period

All features relating to the Fur Trade Period are depicted on Figure 19. The descriptions of individual features follow.

Features F and G: Hearth and Associated Ash Staining

The hearth in 21K53J was completely removed in 1989 and most of the ash staining (Feature G) had been excavated. Work in 1990 in units 21K52J and 21K53J produced no further evidence of either component. Future investigation southward in the unexcavated units 21K52L and 21K53L may provide further evidence of this feature.

Feature H: Wood, Chinking and Charcoal

Investigation of this feature continued in 1990 in level 21K54J6. This level, averaging 3 cm in thickness and covering the east 27 cm of the unit, produced orange chinking and charcoal.

This feature had been identified in 1989, in unit 21K55K. Further excavations in 1990 indicated this is part of Feature I, the cellar depression. The large timber, oriented north-south in the central part of the unit and extending into 21K55J, was initially exposed in 1989. It was removed in 1990 as a sample for species identification (Section 6.14).

Feature L: Palisade/Trench Line

This feature was identified in 1989. It appeared to be a trench running east-west through units 21K54A and 21K55A. Associated with this trench was an infilled V-shaped post hole, tentatively considered to be from a palisade pole. In 1990, this feature was investigated by excavating the southern 25 cm of unit 21K54A 45 cm deeper, to the top of the post hole. Only the western edge of this post hole remains in the east wall of 21K54A. No other post holes were located in the trench or in the immediate vicinity. The trench did not extend further west into unit 21K53A or southward into 21K54Bor 21K55B. If this feature were a palisade trench, it would have continued and more post holes should have been present in these units. Due to horizontal and vertical soil irregularities it is concluded that this trench is most likely a rodent tunnel which coincided with the post hole. The post hole, because of its stratigraphic location, must be associated with Fort Gibraltar I. Excavation to the north of the site could reveal the presence of similar post holes.

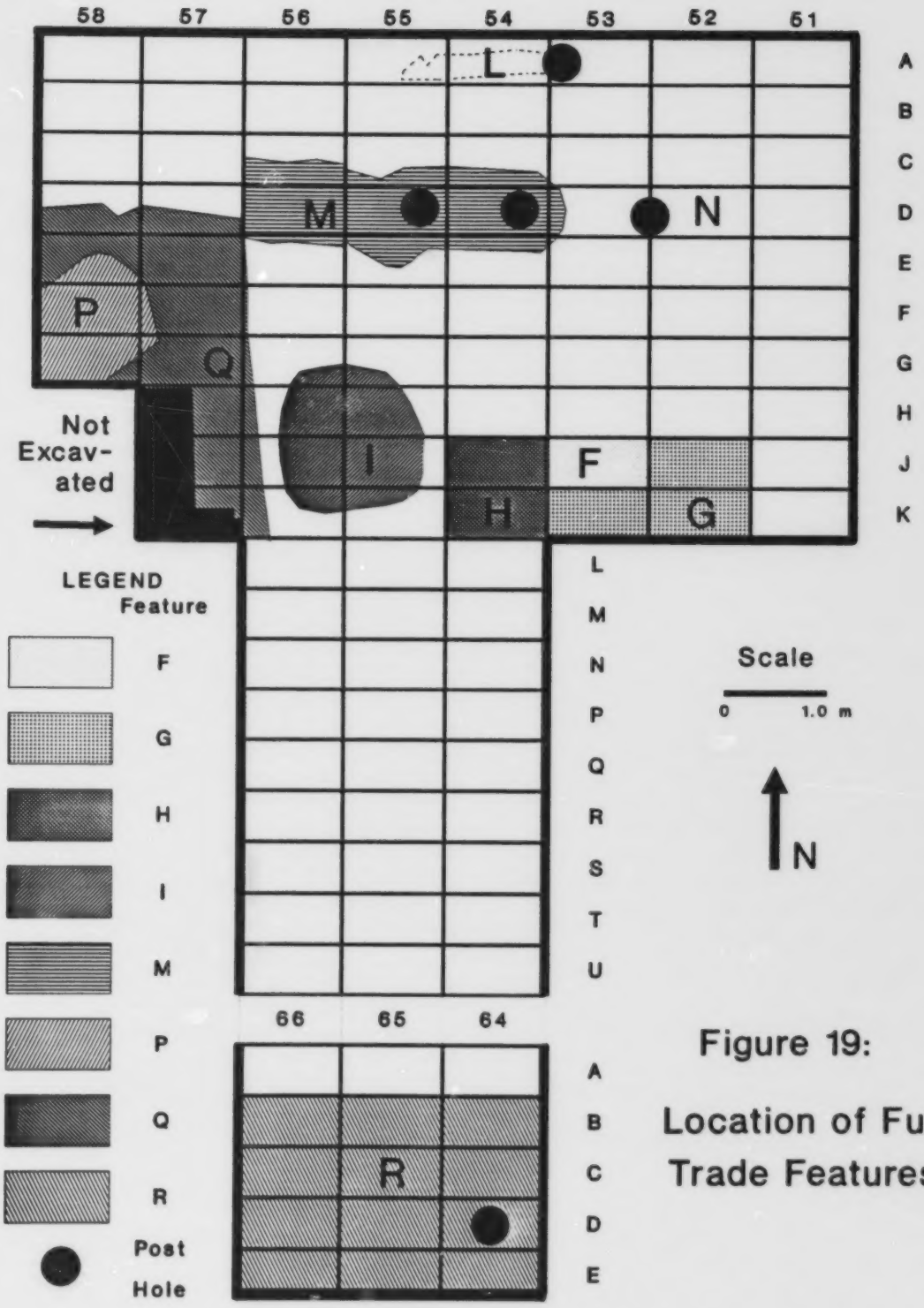


Figure 19:

Location of Fur Trade Features

Feature I: Cellar Depression

One of the most important features excavated during the 1990 field season was the cellar depression (Figure 20). It was initially identified near the conclusion of the 1989 project. It was characterized by a grey-brown clay level (Layer 24) mixed with charcoal flecks, and a charcoal lens mixed with organic material, in unit 21K55J (Kroker, Greco *et al.* 1990:55).

Excavation this season fully delineated the uncribbed cellar feature. The depression is overlain by a 7 cm to 12 cm thick level of grey-green silty clay (Layer 34) which covers the entire surface of the associated units. The upper slope of the feature is covered by a silty clay layer containing patches of chinking (Figure 21 and Figure 22).

The dark organic, brown-black soil horizon is mixed with chinking and charcoal. This layer is dish-shaped and measures approximately 1.5 m in diameter. It ranges in thickness from 6 cm to 30 cm, sloping inward from all edges to its maximum depth in the southeast corner of unit 21K56J. The depression covers the southwest corner of unit 21K55G, the northwest corner of unit 21K55K, and the western 55 cm of units 21K55H and 21K55J (Figure 20). It extends west, across to the southeast corner of unit 21K56G, the eastern 50 cm to 55 cm of units 21K56H and 21K56J, and the northeast corner of unit 21K56K.

The cellar base contained a large amount of chinking, charcoal and burnt timbers. The hard-packed chinking is up to 9 cm thick in unit 21K56J. The timbers are oriented north-south and are in two layers in the western portion of the feature. The chinking is generally present over and between the timbers. These timbers are concentrated in the southeast half and the northwest corner of the depression. Some of the wood, such as that from unit 21K55J, is vertically oriented and is about 14 cm wide and 4 cm thick.

Sandy clay (Layer 27), up to 29 cm thick, underlies the dark horizon and the silty clay layer on the western depression slope, terminating at the dark green clay (Layer 31) on the eastern slope. This sandy clay level contained a large quantity of glass trade beads and lead shot along with burnt bone fragments and a few lithic artifacts, including a gunflint.

The dark green clay occurring on the eastern slope also covered the remaining units from 21K55G south to 21K55K. It, too, contained many trade beads and lead shot as well as a trade ring, a few square nail fragments and burnt bone.

At the base of the cellar depression, underlying the sandy clay level is a dark grey-green, greasy clay (Layer 31) which is 4 cm thick. Many trade beads and lead shot were found in this layer.

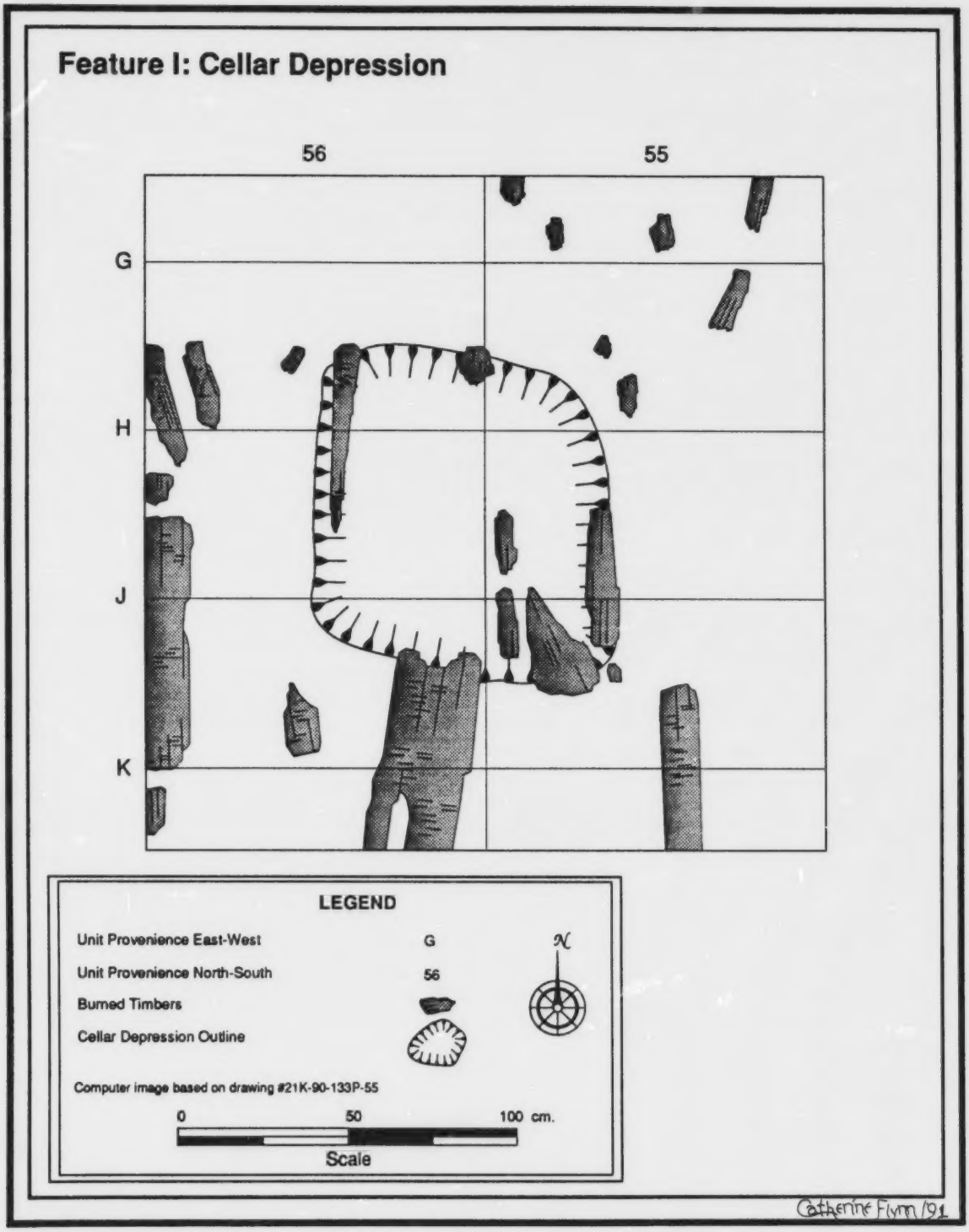


Figure 20: Feature I—Cellar Depression

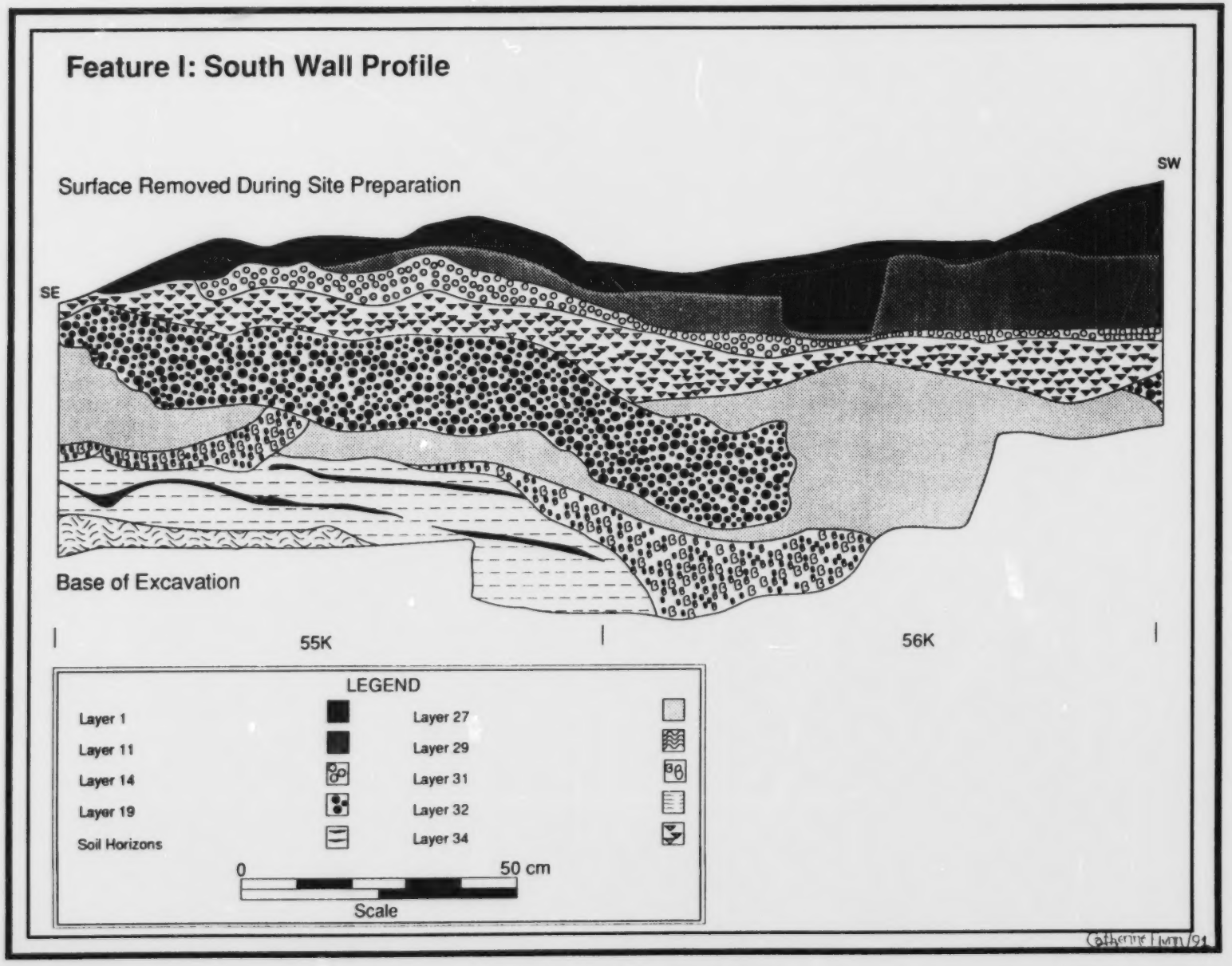


Figure 21: Feature I—South Wall Profile

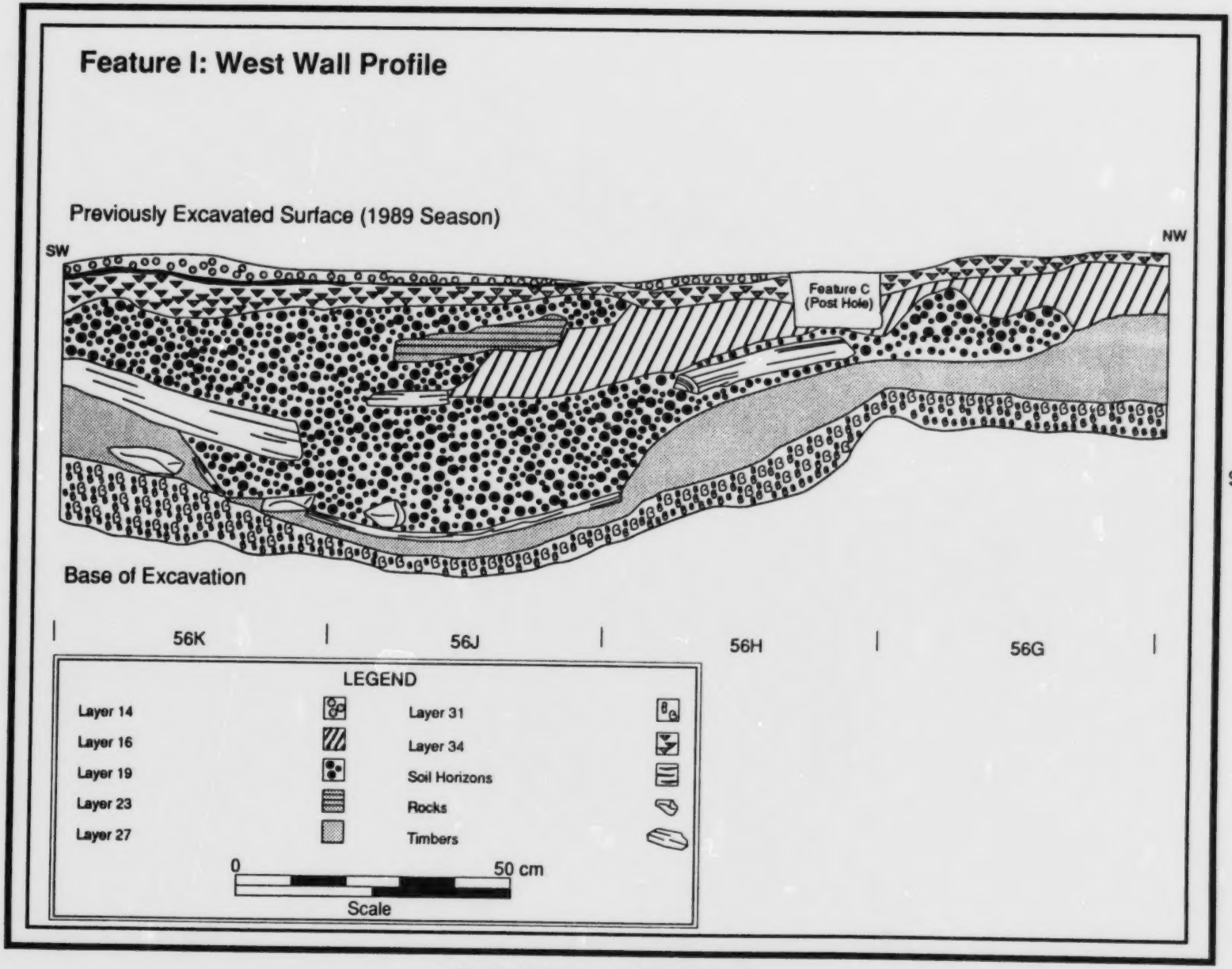


Figure 22: Feature I—West Wall Profile

Several bedded layers of mottled silty clay (Layer 32) are below the cellar depression. The upper 1 cm to 2 cm produced additional trade beads, lead shot and another trade ring. The remainder of this layer was sterile. These mottled silts stopped at the edge of the depression. This is perhaps an original ground surface, to which some artifacts filtered down.

An uncribbed cellar depression was excavated in 1984. It was located about 4.5 m west of Feature I. It measured 1.5 m north-south by 1.0 m east-west and averaged 70 cm to 100 cm in depth (Priess *et al.* 1986:140). Similarly, it contained several charred timbers as well as both fire-reddened and orange chinking. The depression excavated in 1990 had more distinct soil layers and contained a significantly greater number of artifacts, particularly glass trade beads and lead shot. This could be due to the high amount of wall slumpage and fill associated with the 1984 cellar feature, which appears to have resulted in the mixing of soil layers.

Feature M: Wood, Chinking and Post Holes

This feature was first encountered during the 1989 field season in units 21K53D, 21K54C, 21K54D, 21K54E, 21K55C and 21K56C. It was comprised of wood fragments, charcoal and chinking with some ash pockets. A post hole was identified in the northwest corner of 21K54E.

In 1990, the feature was located primarily in units 21K54D, 21K55D and 21K56D. It is represented by thin, vertical fragments of burnt wood, approximately 8 cm long, running east-west in the northern portion of these units (Figure 23). South of this wood were large amounts of orange chinking. The easternmost extent of the feature occurred in the southwest corner of 21K53D, where chinking and charcoal were recovered. Some of the burnt wood and charcoal also occurred along the southern edges of 21K54C and 21K55C. North of the vertical wood, a thick (6 cm to 8 cm) layer of sand from the 1826 Flood occurred. This sand appears to have been washed in and trapped behind the wood.

A horizontal piece of wood was uncovered in the southeast corner of unit 21K54D and extended into unit 21K55D. Another fragment, oriented north-south, was present along the west wall of the latter unit and more pieces, with the same orientation, were located in the western part of unit 21K55E. Approximately 20 glass trade beads and 10 lead shot were found east of this wood.

The chinking deposit in unit 21K54D is thick and concentrated in the west central part of the unit. In unit 21K55D, the chinking is mixed with ash and is present throughout the unit. Another large amount of chinking was found in unit 21K55E, to the west of the north-south oriented wood pieces. It surrounds the wood in 21K56D.

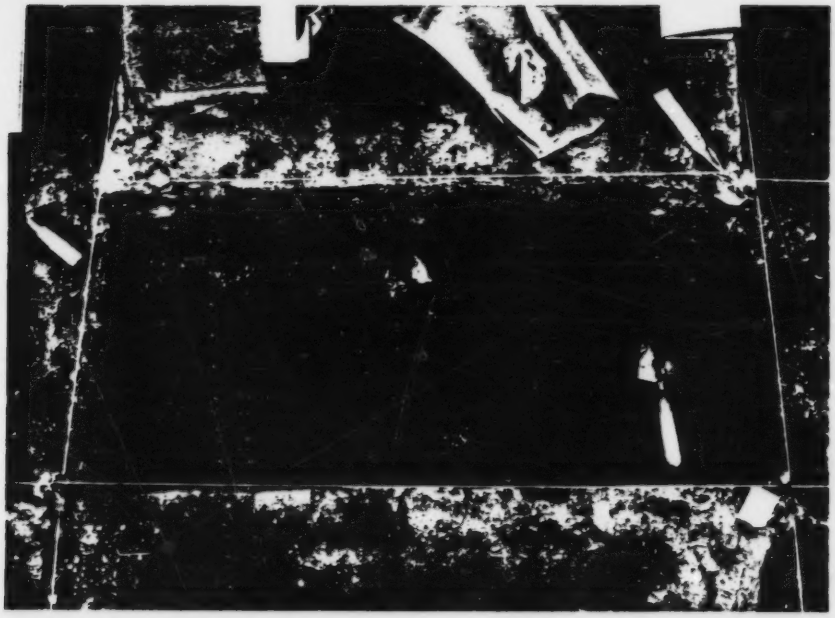


Figure 23: Feature M—Wood and Chinking

Two post holes were identified: one, 18 cm in diameter, in the northeast corner of 21K54D, and the other in unit 21K55D along the north wall, 18 cm in from the east wall (Figure 19). Wood was found adjacent to the latter post hole and may be remnants of the post that once filled the hole. Chinking also surrounds the hole.

This feature could be part of the collapsed north wall of an interior fort structure identified during the 1984 excavation (Priess *et al.* 1986).

Feature N: Post Hole

A post hole was encountered in a tan silty layer in unit 21K52D. It occurs in the northwest corner, extending a few centimetres into the three adjacent units of 21K52C, 21K53C and 21K53D. It is 18 cm in diameter and about 16 cm deep, tapering to a point. The hole is filled with dark organic soil mixed with charcoal.

This post hole is in a near east-west alignment with those in 21K54D and 21K55D. All three are horizontally separated by about one metre and are the same diameter (18 cm). The post hole could be associated with Feature M, but this relationship is tentative due to the large degree of rodent disturbance in the surrounding area, particularly to the west.

Feature P: Chimney Collapse

A large concentration of tabular limestone rocks (Figure 24) was found within a silty clay layer in units 21K58F and 21K58G and in the northwest corner of 21K57G. In addition, a few rocks were scattered over 21K58E. All of the latter unit and the northern half of 21K58F correspond to the 1984 excavation unit 21K6R. In 1984, excavation of this unit ceased once the rocks were revealed and Geotex fabric was placed over the unit at the end of that field season.

Figure 24: Feature P—Chimney Collapse

These rocks were considered part of the fireplace chimney collapse caused by the 1826 Flood (Priess *et al.* 1986:112). The fireplace was found three metres to the west. The rocks overlay 20 cm to 24 cm of Fort Gibraltar I structural debris. Other rock scatters were located within a 1 m to 4 m radius of the identified building (Priess *et al.* 1986:139).

The rocks recovered from the 1990 excavation are at the same stratigraphic level as those from the 1984 field season. They cover all of unit 21K58G and most of unit 21K58F. Some rocks extend into the south wall of unit 21K58G and may relate to those which were in the north wall of 1984 unit 21K6P, only 20 cm to the south. Additional rocks, in the west wall of unit 21K58G, may be associated with rocks

to the west in 1984 unit 21K6I (refer to Figure 6). This feature is approximately one metre east of the large chimney collapse rock concentration located in unit 21K6D during the 1984 project and is certainly part of the same event.

Feature Q: Chinking, Wood and Carbon Stained Flooring

As the 1990 excavation progressed in the northwest portion of the site, linkage with the 1984 dig became imminent. All of 21K58E and the north 30 cm of 21K58F are equivalent to most of 1984 unit 21K6R. As previously discussed, some of the rocks from Feature P covered 21K58E and, once removed, a thick chinking deposit was encountered, extending in all directions (Figure 25).

This deposit spread over the southern parts of 21K57D and 21K58D, the eastern halves of 21K58F and 21K58G, the western halves of 21K57E and 21K57H, and the western 80 cm of 21K57G. It appeared to be in a depression, ranging from 11 cm to 30 cm deep, sloping downward from east to west and inward from the north and south.

The feature extended south and west to 1984 units 21K6P and 21K6S. The latter unit was encountered 40 cm in from the east wall of units 21K57H, 21K57J and 21K57K. The chinking in these 1984 units was 24 cm to 28 cm thick, underlain by charred flooring in 21K6P and by a carbon stained flooring level in 21K6S (Priess *et al.* 1986:174). During the 1990 field season, this flooring level (Figure 26) was found to extend north into 21K57H, through 21K57G and stopped part way into 21K57F. It is characterized by a burned and stained greasy dark grey clay which occurs below the chinking in these units. The level, 2 cm to 5 cm thick, was removed in unit 21K57H and produced several glass trade beads and a copper tinkling cone.

Charred wood from the feature was exposed, primarily east of the chinking. The wood, oriented north-south, extended from 21K57E to 21K57K. Two round, parallel poles, approximately 1.7 m long and 5 cm in diameter, were exposed with a few larger, flat flooring plank fragments 20 cm to 30 cm wide, located below the chinking (Figures 26 and 27). A sandy clay soil underlies and is adjacent to this wood. In 21K57F, approximately 60 glass trade beads and 10 lead shot were recovered from this level.

More thin, charred wood plank fragments were found in 21K58E. This wood extended 30 cm east-west at 30 cm south of the north wall of the unit and into 21K57E. Artifacts included a few glass trade beads which came from the sandy clay around the wood. North of this wood is a thick, sterile grey-green silty clay layer.

Four parallel wood fragments in the western 65 cm of 21K58F were found below the chinking and sandy clay. Each was 15 cm to 20 cm wide and oriented north-south. This wood slopes into a deep depression in 21K58G (Figure 28). A few small pieces of burnt wood were found within the grey, mottled clay in the depression.

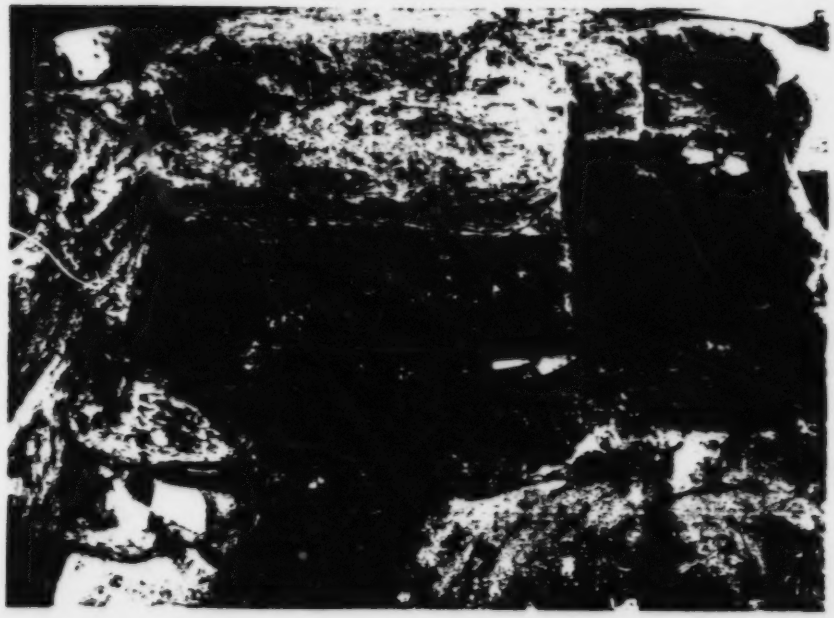


Figure 25: Profile of Feature Q

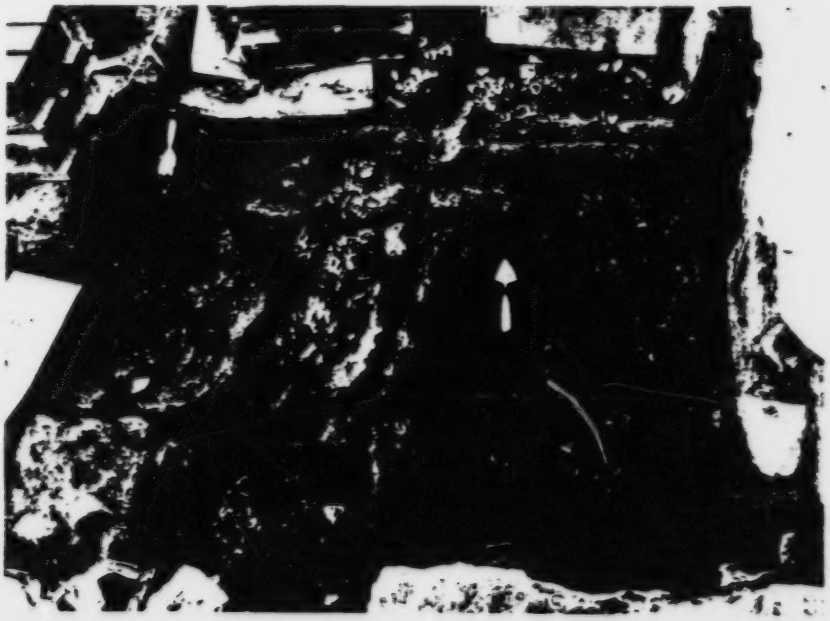


Figure 26: Wood Flooring in Feature Q

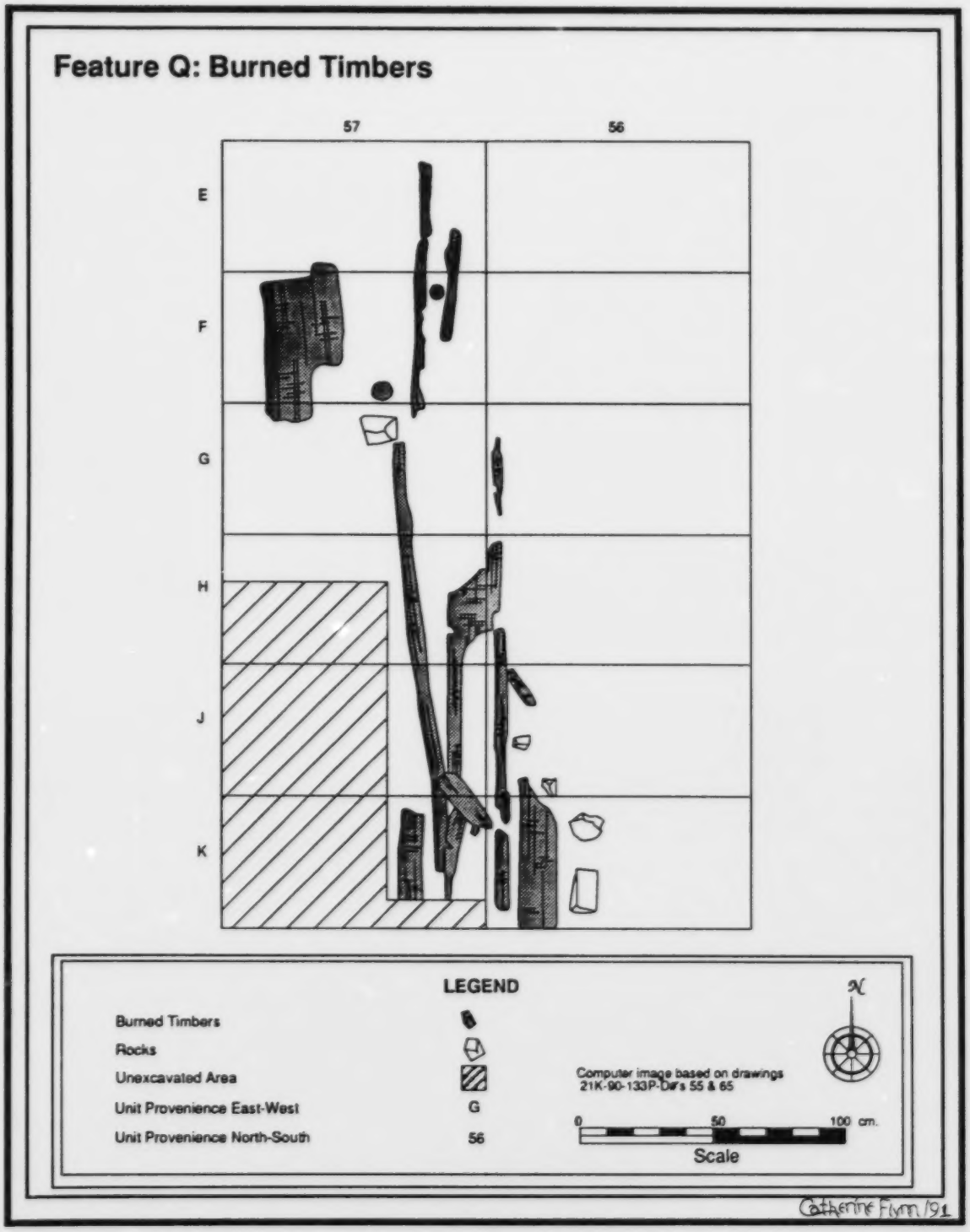


Figure 27: Feature Q—Burned Timbers

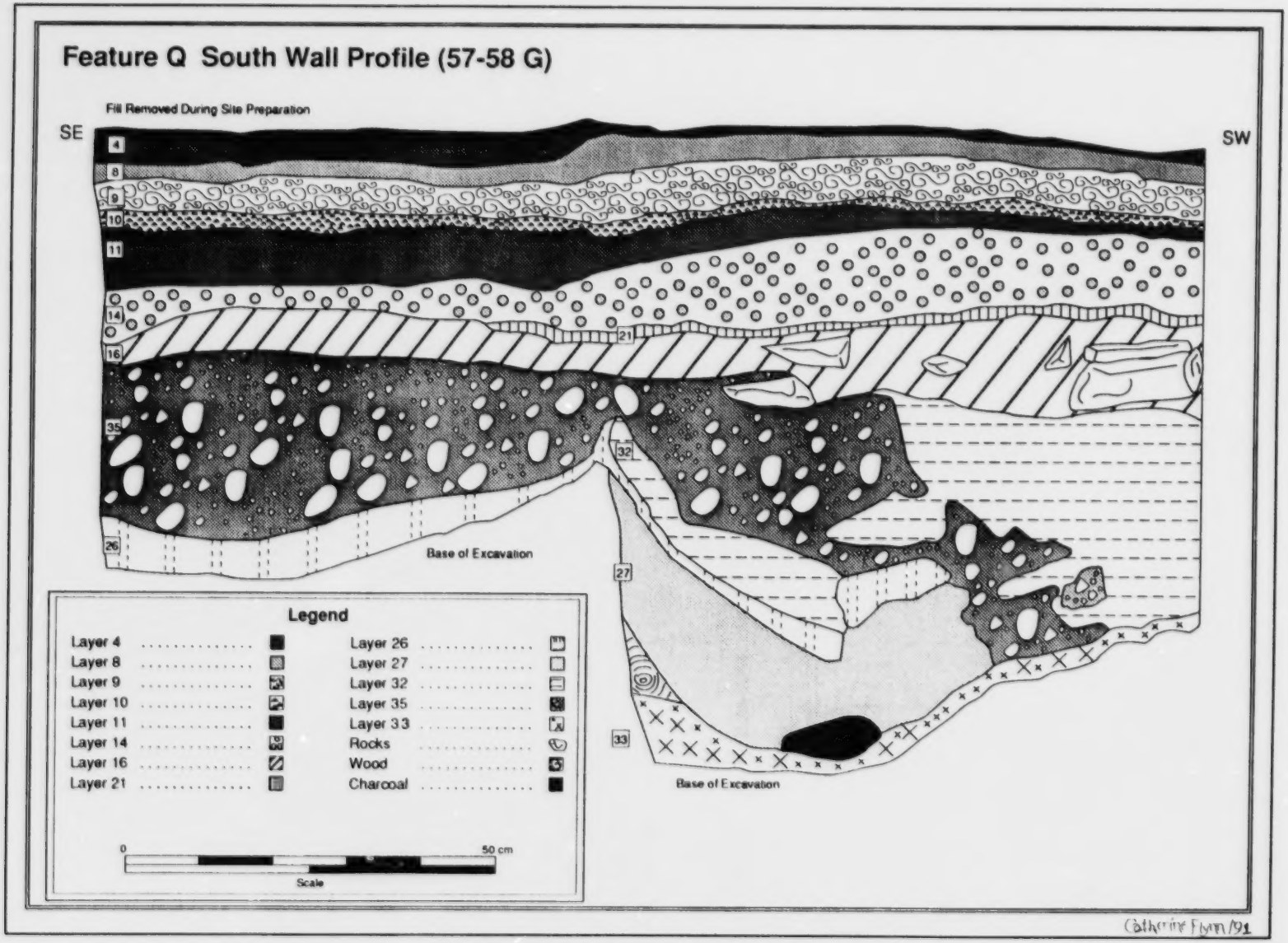


Figure 28: Feature Q—South Wall Profile (57–58 G)

This depression was discovered at the end of the 1990 field season and further excavation is required to better interpret it. Artifact recoveries included two trade rings, many trade beads and lead shot.

This feature would seem to represent the collapse of the structure identified during the 1984 field season. The flooring of the structure would have burned, with some planks remaining in place, oriented north-south. Some of the wood collapsed into the depression in 21K58G and other wood burned away, leaving a carbon stained level. The east-west wood present in 21K57E and 21K58E was below the chinking and may represent the northern limit of the structure discussed from the 1984 excavation (Priess *et al.* 1986:133). This north wall also may be identified in Feature M.

The linear band of chinking running north-south and the associated wood fragments to the east could be part of an inner east wall as detailed in 1984 (Priess *et al.* 1986:133). The long poles could represent roof supports or stringers. Further excavation to the south of units 21K56K, 21K57K and 21K58K is needed to expose more of this feature to determine the dimensions and orientation of this building within Fort Gibraltar I.

Feature R: Chinking, Charcoal and Ash

At the southern end of the newly-opened excavation extension, a large deposit of chinking, charcoal and ash (Figure 19) was uncovered below the olive green, mottled Fur Trade clay (Layer 14). The ash appears to underlie the chinking and charcoal. The feature is deepest in the eastern area in units 21K64C, 21K64D and 21K64E and thins toward the west. There is no ash present in units 21K66C, 21K66D and 21K66E and the chinking and charcoal are mixed with the Fur Trade clay in these units. The feature was excavated only in the easternmost units (21K64C, 21K64D and 21K64E) and the remainder of it was left for the 1991 field season.

The ash deposit, covering the east half of unit 21K64E, was thickest (ca. 25 cm) in the southeast corner. This ash extends north into the east 30 cm of 21K64D where it ranges from 16 cm to 31 cm in depth. It becomes more diffuse in unit 21K64C, occupying all but a central 20 cm strip of the unit, and also extends into the eastern 30 cm of unit 21K65C. A variety of artifacts were recovered from this ash layer including burnt and calcined bone, glass trade beads, a metal knife blade and a stone platform pipe bowl.

Chinking and charcoal were more prevalent in the southwest corner of 21K64B, extending south in a 20 cm strip through 21K64C and into the west portion of 21K64D. The charcoal was patchier in 21K64E and large chinking fragments were excavated from the west half of this unit. The charcoal stain was most visible in the western half of units 21K65C, 21K65D and 21K65E. The chinking, scattered

throughout these units, was concentrated in the southeast corner of 21K65D and was thicker in 21K65E. A large amount of chinking also appeared in 21K66E and in the southwest corner of 21K66D.

Associated with this feature is a post hole in 21K64D which initially appeared in the Fur Trade clay (Layer 14). It is approximately 25 cm in diameter, centred north-south in the unit and 30 cm west of the east wall. Charred wood fragments were present around the western edge of the hole, possibly representing the remains of the post. The hole was partially filled with ash. It was vertically cross-sectioned and the remainder will be left until the next field season.

Further excavation of this feature is necessary to enable a complete interpretation. The ash deposit appears to continue toward the southeast, beyond the current excavation boundary. It may also extend below the chinking and charcoal in the remainder of the feature. The chinking is burnt or unburnt but not fire-reddened or orange in colour, indicating it may not have been subjected to intense or prolonged heat. Large amounts of chinking were retrieved from the western part of the feature and further excavation is required in this direction to expose more of the feature. No wooden structural remains were found in this area of the site. If present, they may be below the chinking and charcoal. The ash deposit could represent a fireplace clean-out dump area over which chinking subsequently fell during a structural collapse.

6.0 CULTURE MATERIAL DESCRIPTION

As in 1989, all artifacts recovered during the Forks Public Archaeology season are discussed in relation to five major events:

a) the Railway Period (1888–1988);
b) the construction of the B&B Building (1888–1889);
c) the Pre-Railway/Post-1826 Flood Period including the Hudson's Bay Company Experimental Farm (1836–1848);
d) the 1826 Flood;
e) the Fur Trade Period, including Fort Gibraltar I (1810–1816).

The construction of the B&B Building appears as a discrete stratigraphic event within more extensive Railway deposits. As such, it is usually discussed as a separate event. However, in Section 6.13 (*Fauna*), bone recovered from B&B Construction levels is combined with Railway fauna (Figure 69) to avoid a distorted impression of the proportion of animal bone recovered from these levels.

Due to the large amount of chinking encountered, not all was kept or curated. The procedure employed was: (1) all chinking was excavated and weighed, (2) a smaller representative sample was removed, and (3) the remainder was discarded. When the representative sample was given an inventory number and entered into the database, the weight of the original sample was recorded. In this way, the total weight of the chinking excavated was preserved, even though only a sample was curated.

Similarly, not all shellfish remains were curated. Most of these shells (i.e., fingernail clams and snails) accumulated by natural processes, and many occurred in association with 1826 Flood deposits. The majority were very small and were found in large quantities, making recovery extremely time-consuming. Therefore, when large numbers of the same variety of shell were encountered, only a sample was collected for identification.

All artifacts were placed into labelled field bags and brought to the laboratory compound for analysis. Participants washed, sorted and identified artifacts before assigning numeric data entry codes. Extremely fragile or perishable remains were not washed, but brushed carefully with a dry toothbrush. A number of very delicate artifacts were selected and set aside for conservation treatment by CPS staff. All other artifacts were washed in fine mesh screens and placed on ¼" mesh drying racks for at least 24 hours.

After artifacts were dry, they were sorted into predefined CPS artifact classes. These classes were: *Glass, Window Glass, Historic Ceramics, Nails, Fasteners, Metal (General), Arms and Ammunition, Smoking Pipes, Fauna, Beads, Native Ceramics, Lithics, Containers, Miscellaneous Organic, Miscellaneous Inorganic* and *Worked Bone*. A final class, *Analytical Sample*, was used to record all soil and wood samples collected. No Native ceramics were found during the 1990 Forks Public Archaeology Project (FPAP) season; all other CPS classes were represented.

After artifacts had been sorted, they were identified using equipment and reference materials available in the laboratory. Staff were available at all times to assist in identifications, which were verified prior to data entry.

Although the above CPS classes were strictly adhered to during artifact identification and data entry, they were modified slightly for the purposes of this report. A large number of bricks (CPS class *Historic Ceramics*) were found; these are discussed separately in Section 6.3. Similarly, buttons are classified within the CPS system according to material. Depending upon the material from which it is made, a button could be classed as *Worked Bone, Fauna, Miscellaneous Inorganic, Glass* or *Historic Ceramics*. All buttons recovered during the 1990 excavations were analyzed as a single group regardless of material type (Section 6.4).

Finally, the CPS artifact class *Window Glass* has been subsumed under the more general heading *Glass* in Section 6.9. This is due to the recent appearance of the recovered sherds and their lack of distinguishing features.

For organizational purposes and clarity, many sections are sub-divided; for example, Section 6.3 (*Bricks*) is divided into *stiff-mud bricks, soft-mud bricks, fire bricks, dry-pressed bricks* and *face bricks*.

6.1 Arms and Ammunition

Seven hundred ten artifacts (710) associated with firearm operation were excavated in 1990. This included 2 complete gunflints, a modified gunflint, an incomplete possible gunflint, 4 cartridge cases and 702 pieces of lead shot (Figure 29).

The two complete and unmodified gunflints were recovered from Fur Trade levels 21K54D6 and 21K56G10. They were identified using a typology developed and utilized to classify gunflints recovered from excavations at Fort Michilimackinac, Michigan (Stone 1974).

Gunflint 21K54D6-4518 has three well-defined transverse flake scars on top. The bed or underside is slightly concave. All four edges exhibit secondary retouch. The central flake scar is parallel to the bed, while the outside scars provide the front and back bevels of the finished flint. This artifact was formed by detaching a short section from a longer, narrow blade flake of fine grade flint. It is complete and measures 20 mm long by 25 mm wide.

The second gunflint (21K56G10-6231) is a spall gunflint, made by striking a single large spall from a flint nodule. Spall gunflints usually have well developed, centrally-located bulbs of percussion near the steep-sided back end or heel. This specimen is typical of spall gunflints, having a steeply-bevelled heel produced by secondary retouch as well as retouched sides. Wedge-shaped in profile, it has a flat underside and measures 23 mm long by 28 mm wide. One corner has been broken off, possibly by impact.

Figure 29: Firearm Related Artifacts

Gunflint 21K56H10-6213 has been extensively reworked. It exhibits two transverse flake scars on one side, indicating it was originally a blade gunflint. All other attributes have subsequently been obliterated by bifacial retouch, so that the modified flint is nearly crescentic in shape. Like flints 21K54D6-4518 and 21K56G10-6231, it is made of a honey-coloured translucent chert, suggesting it may be of French origin (Hanson 1970:53).

Two chert flakes, excavated from Fur Trade level 21K64D6, fit together. The refitted fragment (21K64D6-6221) is dark reddish-purple and has the granular appearance of chert which has been exposed to very high temperatures. This reassembled incomplete fragment is 25 mm wide. At one end, where both the upper and lower surfaces are present, it is 4 mm in height. Slightly concave on one surface, the opposite surface is very flat. It has been retouched on three edges while the fourth edge is absent. The entire fragment has the appearance of a burnt and broken gunflint.

Four shotgun cartridge cases were recovered. A single brass 32 gauge casing (21K58D3-5968) came from Railway Feature B. A 410 gauge brass case (21K52G95-5982) came from a deep pit excavated in order to ascertain the presence or absence of any underlying Pre-Contact material. The presence of this artifact in pre-Fur Trade levels is attributed to rodent activity or slumpage from overlying strata. Two badly rusted cases of ferrous (iron?) material (21K65E3-5966) were excavated from a disturbed level classified as Pre-Railway/Post-1826 Flood but mixed with a great deal of Railway fill. Although the rusted condition of the cases make size determination difficult, they appear to be 12 gauge.

The 702 pieces of lead shot range in size from number 12 to number 2 on the Winchester Standard Shot Chart (Ashdown 1909:1272). This size shot was likely used to hunt birds and small animals. All are complete but oxidized, and none have been flattened by impact. Shot were concentrated in Feature I and adjacent units and in the northern excavated area of the site extension (Figure 30). Table 1 illustrates the distribution of Arms and Ammunition by event.

Event	Lead Shot	Gunflint	Cartridge Case	TOTAL
Railway			1	1
B&B Construction	1			1
Pre-Railway/ Post-1826 Flood	22		2	24
1826 Flood	4			4
Fur Trade	675	4	1	680
TOTAL	702	4	4	710

Table 1: Distribution of Arms and Ammunition by Event

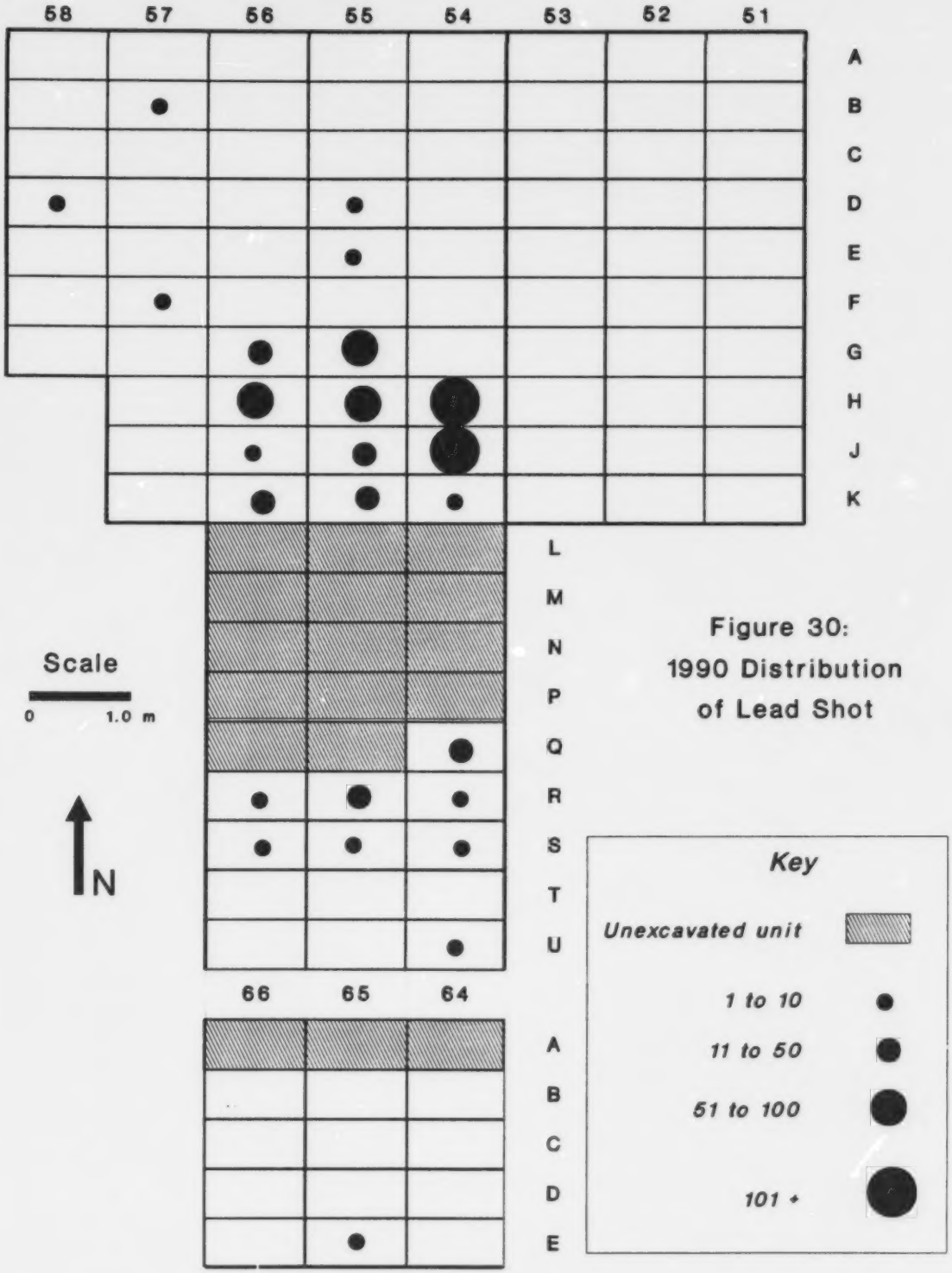


Figure 30:
1990 Distribution
of Lead Shot

6.2 Beads

Beads comprise a significant portion of the 1990 artifact assemblage. In contrast with the 461 beads recovered during the 1989 season, a total of 3,093 beads were excavated in 1990.

Three beads were made of shell; all others were made of glass. The vast majority of glass beads were white (2,754), although beads in various shades of blue, black, green and red were also found (Table 2).

	Drawn		Wound		
Bead Colour	Tubular, unground	Rounded, ground	Oval, unground	Undetermined	TOTAL
White	6	2747	1		2754
Turquoise	1	70			71
Ultramarine	8	83			91
Sky Blue		30			30
Black		106			106
Redwood/Green		3			3
Redwood/Grey		1			1
Green		3			3
Polychrome			1		1
Colourless		11			11
Undetermined				19	19
TOTAL	15	3054	2	19	3090

Table 2: Types of Glass Beads by Colour and Finishing Treatment

The two most common types of glass bead, named for their methods of manufacture, are wound and drawn. Wound beads were produced by wrapping a viscid filament of glass around a rotating metal mandrel one or more times, until a bead of the desired size was formed. Various design elements could then be added while the glass was still soft (Karklins 1982:92). Swirl marks encircling the bead axis and air bubbles elongated in the same direction are diagnostic of wound bead manufacture.

The process of making beads one at a time was tedious and time consuming. The drawn bead process offered a faster alternative. A hollow tube or cane of molten glass up to 300 yards in length was drawn out from a blown glass bubble. After the tube had cooled, it was broken into smaller, workable sections which were then cut into bead lengths. Bead ends could be rounded or left unaltered. If rounding was desired, the beads were placed into a large drum containing a mixture of

plaster and graphite or clay and charcoal dust. The drum was then *tumbled* or heated and rotated in an oven (Karklins 1982:87). The heat and agitation rounded the ends, while the packing material prevented beads from fusing together and collapsing. The longer the beads were tumbled, the more rounded they became. Drawn beads often exhibit linear striations running parallel to the bead axis. These striae are glass fibres and, along with air bubbles elongated in the same direction, are considered diagnostic of drawn bead manufacture.

With the exception of two wound beads, all beads recovered during the 1990 field season were drawn. The first wound bead (21K54U5-4498) is highly decorated, having a series of white and gold bands spiralling around a light blue body (Figure 33). It is complete, measuring 12 mm in length and 6 mm in diameter. No beads of this type could be identified in the available reference material, although a number with identical design elements but slightly different in colour are considered to be of Venetian origin (Karklins 1985).

The second wound bead, 21K54Q4-7414, was recovered from level 21K54Q4 (Pre-Railway/Post-1826 Flood). The undecorated white body is nearly complete, being chipped at one end. Although it has the faintly bluish, banded appearance of shell, chemical testing has indicated that it is made of glass. The distribution of glass within the bead is uneven, so that viewed end-on, it is thicker at some points than at others. This specimen measures 6 mm in length and 3 mm in width.

Beads were found throughout the site, although the majority were concentrated in the vicinity of units 21K54H, 21K54Q, 21K54R, 21K55H, 21K55J and 21K56G. Three of these units are within Feature I, a Fur Trade Period cellar depression. The vast majority of beads were recovered from levels designated as Fur Trade (Figure 31).

Three thousand fifty-four (3054) of the beads recovered were of Type IIa (non-tubular) as defined by Kidd and Kidd (1970:51). Beck (1928:6) has defined these as *short beads* (i.e., having a length more than one-third and less than nine-tenths their diameter) (Figure 32). These well-rounded glass beads, in various colours (Table 2), exhibit the linear striae parallel to the bead axis that are diagnostic of drawn bead manufacture. Although the 106 black beads recovered are also Type IIa, they have been so rounded that they are doughnut-shaped.

Three beads (21K55U6-6383, 21K58A10-6480 and 21K66B3-6127) are composed of an opaque redwood outer layer covering a translucent apple green core (Type IVa5). These beads (Figure 33), also known as *Cornaline d'Aleppo*, have been recovered from various historic sites (Karklins 1974, 1981; Mason 1986). A single variation, 21K65E6-6266, exhibited the same redwood outer covering, but with a light grey core (Type IVa2). A number of identical beads have been recovered at various archaeological sites in Holland (Karklins 1974:77) in association with opaque redwood and translucent green glass slag. This evidence suggests that the redwood beads found during the 1990 FPAP excavations may have been Dutch in origin.

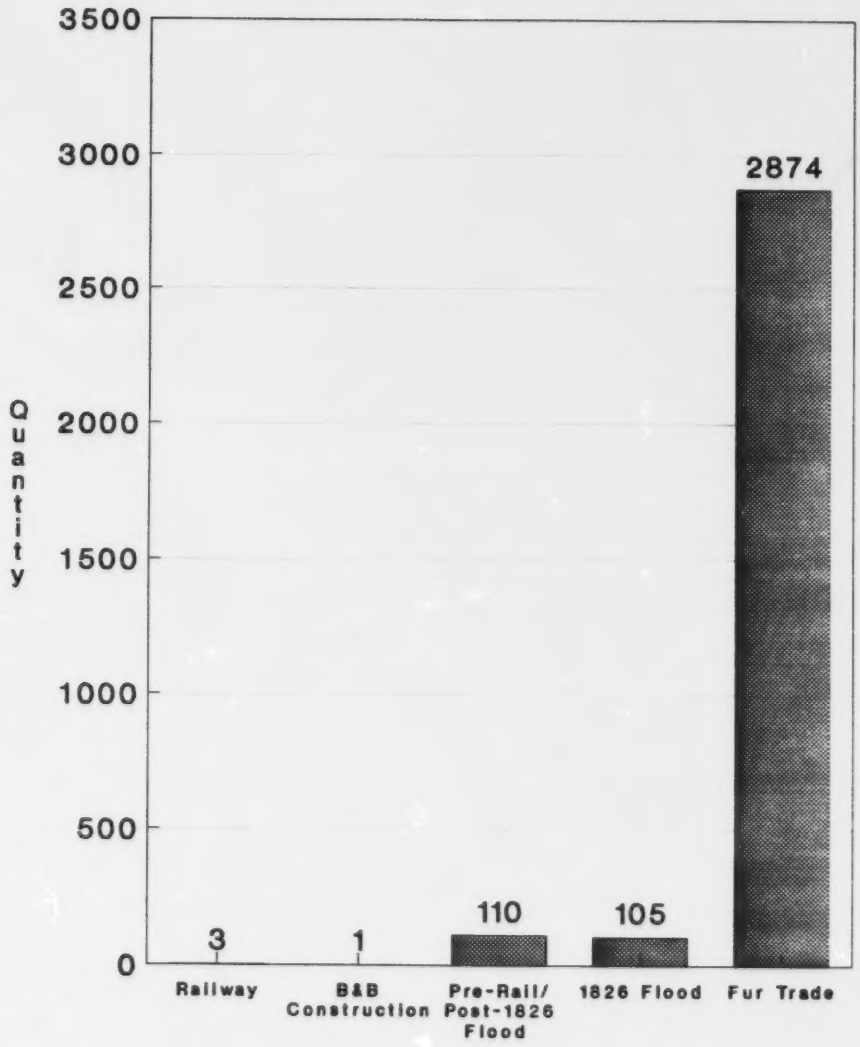


Figure 31: Distribution of Beads by Event

Fifteen beads are distinctly tubular in shape and are classified as Type Ia (Kidd and Kidd 1970:51). The ends of these beads have not been rounded and are jagged in appearance. The majority range in length from 2 mm to 4 mm, although two very long specimens have been recorded. The first of these, 21K57F8-6476, is ultramarine and measures 11 mm in length. Glass fibres within the bead are highly visible, giving it an opaque appearance. The second very long tubular bead recovered, 21K54Q9-6521, is opaque white glass and measures 14 mm in length.

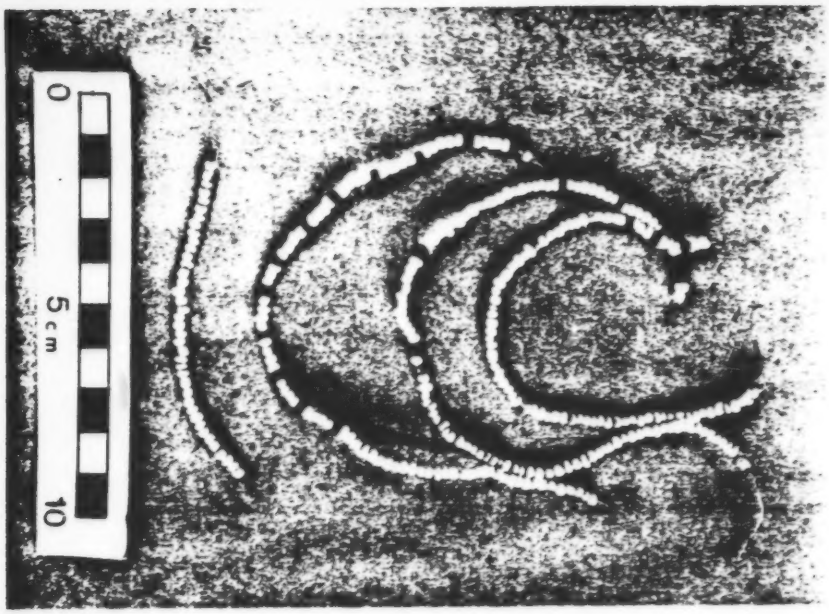


Figure 32: Sample of Drawn Beads

Figure 33: Selected Bead Types

Three shell or wampum beads (21K54R9-7415, 21K54U2-6195 and 21K58D4-6503) were recovered during the 1990 field season (Figure 33). Measuring between 4.5 mm and 5 mm in length, these tubular beads bear the purple and white stripes typical of the Northern Quahog shell (*Mercenaria mercenaria*). The natural habitat of this shell extends from the southwestern Gulf of St. Lawrence to Florida and the Gulf of Mexico (Abbott 1954:406).

Wampum beads were originally made by Native peoples and used as both a form of adornment and an indication of wealth. In the 17th century, European traders on the eastern coast of North America recognized wampum's tremendous trade value. Metal drills and files enabled them to produce wampum beads of uniform size and quality in large quantities, and, eventually, to entirely take over production. What began as a home industry for the European traders gradually expanded, and, in 1746, John Campbell of New Jersey established a wampum factory which produced up to 10,000,000 shell beads yearly. This factory operated until late in the 19th century, when the demand for wampum appears to have ceased (Armour 1977:16). Wampum beads are a fairly common find on early historic sites across eastern and central Canada.

The uniform diameter and precise drilling of the internal hole suggest that the three wampum beads from Fort Gibraltar I are European trade items rather than beads manufactured by Natives. They are virtually identical to the four wampum beads recovered during the 1989 season (Kroker, Greco *et al.* 1990:123).

6.3 Bricks

A total of 188 bricks and brick fragments were recovered during the 1990 season. One hundred fifty-one (151) were complete or half-complete common and fire bricks. All but two came from Railway Feature B, and many had mortar adhering to one or more surfaces. The remaining 21 fragments were too small to identify the method of manufacture. Sixteen large face brick fragments were recovered from Feature B. Of these, eight were curated.

Traditionally, bricks recovered from archaeological sites have received little attention. Factors such as manufacturing technique, dimensions and colour can provide valuable information as to when and where a brick was produced, as well as the source of the clays used in its manufacture. All curated common bricks found during 1990 FPAP excavations were measured and designated yellow, orange or red based upon values obtained from Munsell colour charts (Table 3). The distribution of curated bricks by colour is plotted in Table 4. The primary reference used in this section is Gurke (1987).

	Yellow	Orange	Red
Munsell Colour Values	2.5Y 7/6	5YR 5/6	2.5YR 4/8
	2.5Y 8/2	5YR 5/8	2.5YR 6/6
	2.5Y 8/4	5YR 6/4	
	2.5Y 8/6	5YR 6/6	
	5Y 8/3	5YR 7/4	
	10YR 6/6	5YR 7/6	
	10YR 7/4	7.5YR 5/4	
	10YR 7/6	7.5YR 5/6	
	10YR 8/2	7.5YR 6/4	
	10YR 8/3	7.5YR 6/6	
	10YR 8/4	7.5YR 7/4	
	10YR 8/6	7.5YR 7/6	
		7.5YR 8/6	

Table 3: Munsell Colour Classification

Event	Level	Yellow	Orange	Red	TOTAL
Railway Feature B	21K57B4	3	4		7
	21K57C3	7	6		13
	21K58B3	30	13	3	46
	21K58C3	27	22	4	53
	21K58D2	20	10		30
Disturbed Fur Trade	21K58D4		1		1
Disturbed Pre-Railway/ Post-1826 Flood	21K65E4	1			1
TOTAL		88	56	7	151

Table 4: Distribution of Common Bricks by Colour

The quality of the clay used in brick manufacture determines the quality of the brick produced. Clays are chosen for their strength, purity and heat resistance, and must be cured prior to use to ensure that correct quantities of air and water are present. *Grog* (ground particles of old brick, retorts, crucibles, china and hardened fragments of burnt clay) is usually added to impart additional strength and/or heat resistance.

Bricks were kept if they satisfied one of the following criteria: (1) displayed brands or other distinctive manufacturing marks, either intentional or accidental, (2) were a size not previously recorded, or (3) were a Munsell colour not previously recorded. Of the 151 bricks recovered, 93 met one or more of these criteria. Seventy-one of these were manufactured by the stiff-mud extrusion method, twenty were soft-mud bricks, and two fragments were dry-pressed. Of the twenty soft-mud bricks, two fragments were of repressed fire bricks. Table 5 delineates the breakdown of common bricks by manufacturing technique and excavation level.

Level	Soft-Mud	Stiff-Mud	Dry-Pressed	TOTAL
21K57B4	1	11		12
21K57C3	5	13		18
21K58B3	5	35	2	42
21K58C3	7	37		44
21K58D2	6	27		33
21K58D4	1			1
21K65E4	1			1
TOTAL	26	123	2	151

Table 5: Distribution of Common Bricks by Manufacturing Technique

6.3.1 Stiff-Mud Bricks

Stiff-mud bricks are generally more recent in date than both soft-mud and dry-pressed brick. A column of clay is forced through a die or mouthpiece, which is usually rectangular. Oil or water is used as a lubricant in the die, producing four very smooth, regular surfaces on the column. The clay column is then cut into uniform lengths, and the green (unfired) bricks are dried prior to being fired in a kiln.

Seventy-one stiff-mud bricks, all from Feature B, were curated. All have the regular shape, smooth surface, and rounded corners characteristic of stiff-mud manufacture. Curved ripple marks left on the brick ends by a cutting wire are diagnostic of end-cut bricks. A number of the bricks were apparently made by the same machine. Not only do they have identical dimensions, but many have an irregular linear furrow running down a single face, 2.2 cm from the brick edge. This feature was likely produced by a piece of harder clay or larger piece of grog that caught inside the die and incised the column of clay as it issued from the extrusion machine. All complete bricks were manufactured by stiff-mud machine. These bricks were uniform in size, measuring 20 cm in length, 9.5 cm in width and 5.5 cm in height. Similarly, all incomplete stiff-mud bricks measured 9.5 cm in width and 5.5 cm in height. One complete brick (21K57C3-7407) has a V-shaped incision 3 cm long and approximately 0.5 cm deep on one face. This small indentation has no apparent utility and may have been produced by accident before the brick was fired. Internally, the stiff-mud bricks are relatively fine-grained, with small inclusions of grog or temper.

End-cut stiff-mud brick 21K58C3-7408 has been stamped by the manufacturer. It is very wide, measuring 11.5 cm wide and 6 cm high. The partial brand "LUC..." is stamped on one face (Figure 34). The company which manufactured this brick and the date of manufacture are unknown. It has been subjected to *repressing*, a process in which pressure is applied to all sides of the newly-formed brick. Not only does this produce a stronger, denser brick of a more regular shape, but it allows the manufacturer to impress the company name or a trade name into the brick surface.

6.3.2 Soft-Mud Bricks

Soft-mud bricks may be manufactured either by hand or by machine. In both cases, clay is forced (or dumped) into single or multiple molds. When the clay has been forced well into the corners of the mold, the excess clay is trimmed or struck from the single exposed face. The mold is then inverted and struck sharply to dislodge the green brick. A variety of lubricants, including water, sand and oil, are used to help the formed brick slip free from the mold. Water and sand are the two most common, and bricks manufactured using these lubricants are described appropriately as *water-struck* and *sand-struck*.

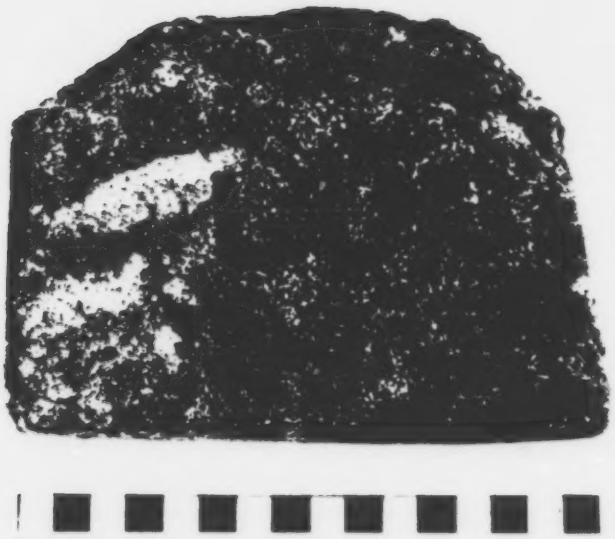


Figure 34: Repressed Stiff-Mud Brick with Partial Brand "LUC..."

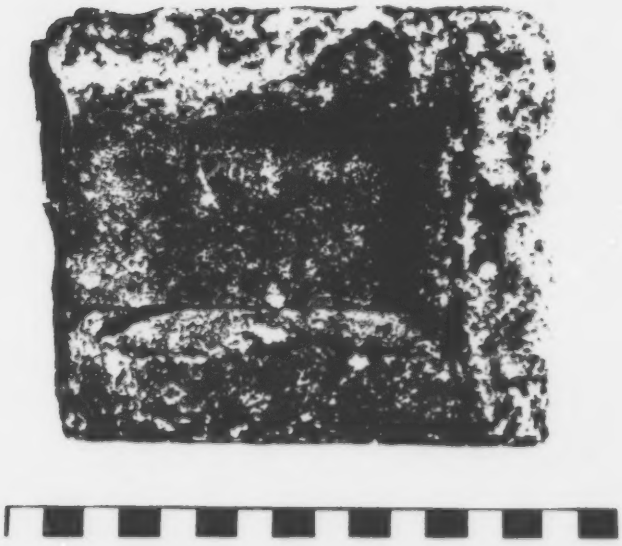


Figure 35: Soft-Mud Brick with Frog

Twenty soft-mud bricks were curated. Eighteen came from Railway Feature B, one (21K65E4-6610) came from a disturbed Pre-Railway/Post-1826 Flood level and one (21K58D4-7409) from a disturbed Fur Trade level.

All soft-mud bricks are consistently wider, softer and denser than the stiff-mud bricks recovered. The single struck surface contains numerous tear marks produced as the striking tool trimmed off the excess clay. Although no complete soft-mud bricks were found, measurable dimensions range from 10 cm to 10.5 cm in width and 5 cm to 6 cm in height. All have the sandy, granular surfaces characteristic of sand-struck bricks. In contrast with the rounded edges produced by stiff-mud extrusion, the edges of these bricks, where not badly worn, are sharp.

Of the 18 soft-mud bricks curated from Railway Feature B, 16 have impressed depressions on a single face. These depressions, known as *frogs*, range in width from 4.5 cm to 6.5 cm and in depth from 0.5 cm to 1 cm (Figure 35). Originally introduced as a key for mortar, frogs soon became popular as a way to decrease the weight of the brick and stretch raw material further (Gurcke 1987:112). In general, the frogs exhibit a great deal more variation than the bricks themselves. Apart from the 2 cm range in width, there is also a great range in the slope of the frog impression. Some are shallow, while others are steep-sided and relatively deep.

The remaining two soft-mud bricks from Feature B do not have frogs, but have been repressed. These bricks, 21K58C3-7410 and 21K58B3-7413, are fire bricks (Section 6.3.3).

An incomplete soft-mud brick (21K65E4-6610) was recovered from a level designated Pre-Railway/Post-1826 Flood. However, this area has been badly disturbed and contained large amounts of debris directly associated with the Railway Period. It is sand-struck, has a frog, and has the same dimensions as the other frogged soft-mud bricks.

An incomplete brick (21K58D4-7409) recovered from level 21K58D4 is the single most interesting brick recovered during the 1990 season. It is striking in its distinctiveness, and appears to have been formed from the same clay that has been used as chinking throughout the site. Although no strike face is discernible, the brick is sand-struck and its edges are irregular. A single face is noticeably more uneven than the rest of the brick; such an appearance could have been produced if the brick was formed in an open mold and not struck off. Pores within the brick matrix are numerous, resembling the cavities left in chinking by decomposed organic inclusions, although no distinct grass marks are present. Grog, consisting entirely of small clay fragments of the same colour as the brick, has been added. Mortar adheres to one side. Interestingly, its measurable dimensions, 6 cm high by 10 cm wide, are identical to those of the soft-mud bricks.

The level from which brick 21K58D4-7409 was recovered lies immediately beneath Feature B. Although this level is designated as Fur Trade, the feature outlines are indistinct in many places and there is a possibility this level has been partly or entirely disturbed. However, the resemblance of the brick material to Fur Trade chinking suggests the specimen was likely manufactured from local clays during the Fur Trade Period.

6.3.3 Fire Bricks

Fire bricks are made of clays able to withstand extremely high temperatures, and are used primarily in kiln and firebox construction. They must also be able to withstand chemical and physical abrasion and the tremendous thermal stresses encountered in these environments. A mixture of clays may be used and high-strength, heat-resistant grog is added. Small pieces of iron are a common ingredient in fire brick, as the machines used to crush and grind the grog wear rapidly (Gurcke 1987:99).

Four fire brick fragments were recovered from Feature B during the 1990 season. Two are repressed soft-mud manufacture and two are dry-pressed (Section 6.3.4). All have maker's marks stamped on them.

Fragments 21K58B3-7411 and 21K58C3-7410 fit together. The reconstructed brick measures 22.5 cm in length by 10 cm in width and 6 cm in height. The phrase "FULTON, MO." is stamped on a single face (Figure 36). Although the manufacturing technique is difficult to determine, this brick appears to have a single struck face, suggesting it was initially formed as a soft-mud brick and then repressed. Internally, this brick is much coarser than the other stiff-mud and soft-mud bricks recovered, with large pieces of grog added as temper.

The Fulton Fire Brick Company of Missouri manufactured fire bricks stamped with a variety of brand names from 1887 to 1927. Fulton bricks branded "FULTON, MO." were produced between 1887 and 1913 (Gurcke 1987:238–239). Its inclusion in fill that appears to have been deposited in 1889 suggests this brick was one of the earliest varieties produced by this company.

The remaining two fire brick fragments were produced by a single company. Both incomplete, one (21K54C5-7412) bears the brand "...& C. Co. ...UIS," while the other (21K58B3-7413) has "...B & C. Co.../ ...OUIS" stamped on it (Figure 37). Although the maker has not been positively identified, this may be a brand of fire brick manufactured in St. Louis or a product of the St. Louis Fire Brick and Clay Company of California. Both fragments appear to be dry-pressed (Section 6.3.4).

Figure 36: Repressed Soft-Mud Fire Brick "FULTON MO."

Figure 37: Dry-Pressed Fire Bricks

6.3.4 Dry-Pressed Bricks

Dry-pressed bricks contain less than 10% water (Gurcke 1987:22). Tremendous pressure is applied to the brick in order to bond the almost-dry clay. Bricks manufactured by this technique were being produced by the mid-1800s; however, as late as 1890 the process was fraught with difficulty. Frequently, the clay did not bond properly due to its low water content and the high pressures which had to be achieved in the pressing process.

Dry-pressed fire bricks 21K54C5-7412 and 21K58B3-7413 measure 11 cm wide by 6 cm high. Both have apparently been used in a firebox or kiln, as there is molten slag adhering on several sides. Although internally coarser than the majority of excavated bricks, these fragments have a finer grain than the Fulton fire brick recovered.

A total of 21 very small brick fragments were recovered from units in the vicinity of Feature B and from units 21K65B, 21K64B and 21K66B to 21K66E. Although too small to identify any manufacturing characteristics, all have the same texture and are in the same colour range as the stiff-mud and soft-mud bricks.

6.3.5 Face Bricks

Sixteen face brick fragments were excavated, all from Feature B. Four came from level 21K58C3, seven from 21K57C3, two from 21K58D2 and three from 21K58B3. Eight were curated.

Gurcke (1987:98) states that only bricks which have received the most uniform and even heat during firing are used as face bricks. Clays low in impurities are often used in their manufacture. In general, face bricks are better quality than common bricks and are often repressed.

The face bricks recovered during the 1990 FPAP season are not particularly good quality. They are coarse-grained and friable, with large pieces of grog (approximately 3 mm in diameter) added. However, four fragments have grooved elements similar to the Tongue and Groove variety of face brick recorded by Gurcke (1987:121). Three others have flat faces, two with dark red paint adhering. They differ in colour from the common bricks found, varying from shades of purple to pink rather than yellow and orange (Table 3). Two more of these fragments have a thick layer of slag adhering on one side. The smallest of the fragments curated is 15 cm long, the largest 24 cm in length by 18 cm in width.

6.4 Buttons

Nineteen buttons were found during 1990 Public Archaeology excavations. One is shell, one is bone, eight are metal, three are plastic, one is hard rubber and five are glass (Table 6).

Bone button fragment 21K56R6-4554, recovered from a level designated 1826 Flood, is incomplete. It is 13.5 mm in diameter and has had a single hole drilled through it. It is flat, thin (1.5 mm thick) and regular in shape. Similar thin bone circles or *blanks* have been identified in large quantities at Fort Michilimackinac, Michigan (Stone 1974:61).

Many buttons found at Michilimackinac consisted of a copper or brass face or *crown* and a bone back (Stone 1974:61). These backs had a central hole drilled through them to accommodate a metal shank or eyelet. As the existing backs became worn or broken, they were replaced with bone blanks manufactured on-site.

Bone fragment 21K56R6-4554 (Figure 38) is likely a button blank rather than a used button back. Like the blanks recovered from Fort Michilimackinac, its edges have not been cut and recessed to receive a crimped metal crown (Stone 1974:59). Its diameter of 13.5 mm falls within the lower range of sizes recorded for the Michilimackinac blanks (13 mm to 15 mm and 19.5 mm to 21.5 mm).

Event	Level	Bone	Shell	Metal	Plaster	Rubber	Glass	TOTAL
Railway	21K57B8				1			1
	21K57C4			1				1
	21K58B7			1				1
	21K58B9			2			2	4
	21K58C5			1			1	2
	21K58D3			1	1		1	3
	21K65B5				1			1
Pre-Railway/ Post-1826 Flood	21K54U2		1					1
	21K58B6					1		1
	21K64E2						1	1
	21K66B2			1				1
1826 Flood	21K56R6	1						1
	21K65D3			1				1
TOTAL		1	1	8	3	1	5	19

Table 6: Distribution of Buttons by Material

Figure 38: Bone, Shell and Metal Buttons

Figure 39: Decomposed Lead Button

A complete mother-of-pearl button (21K54U2-5942) was excavated from a Pre-Railway/Post-1826 Flood level. It is 10 mm in diameter and has four holes drilled through it (Figure 38). The uniform dimensions and sharp edges of this button suggest it was cut by machine rather than shaped by hand.

Shell buttons were manufactured during the late 18th century and throughout the 19th century. Although early examples were manufactured solely by hand, the introduction of foot-powered lathes with tubular saws provided a fast, accurate way of producing shell blanks, which were split into discs of uniform thickness and rasped smooth (Davis 1984). Two to four holes were normally drilled through the button, which was then sewn to the clothing.

The eight metal buttons are all complete (Figure 38). Two are composed of ferrous metal so badly rusted that no surface features can be identified. Both came from Feature B. Of the remaining six metal buttons, one (21K58C5-6991) is ferrous and two (21K65D3-5940 and 21K66B2-5938) are made of brass. They are 17 mm, 10 mm, and 12 mm in diameter respectively. Each of these three buttons has two holes punched through it, and two (21K65D3-5940 and 21K66B2-5938) have raised rims.

A single metal two-hole button (21K58B9-5935), 14 mm in diameter, is painted black on both sides (Figure 38). It was found in Railway Feature B. The holes are sunk in a central depression, around which a beaded border has been impressed. This button may be an example of *Japanning*, a process by which a hard, glossy black finish was applied in imitation of Oriental lacquer. Although a Japanned finish was initially produced by applying a mixture of glass and shellac overlain by several coats of varnish, an improved method was patented in 1839 (Davis 1984). The new extremely durable finish was obtained by coating the surface with a partially vitrifiable solution which was heated and then baked on. Brass, copper and iron were the favoured manufacturing materials. Button 21K58B9-5935 appears to be brass, having a very slight greenish patina.

Lead button 21K57C4-4530 (Figure 39) was recovered in an extremely advanced state of decomposition. Although found in Railway Feature B, the button itself is embedded in a large fragment of chinking, suggesting it originated in underlying Fur Trade levels. No decoration is discernible on its face, although two holes are faintly visible. Conservation treatment will be performed in order to stabilize the button prior to its removal from the clay matrix.

Metal button (21K58B9-6981), also found in Feature B, is made of pewter. It measures 14 mm in diameter and is badly oxidized. Although circular, it has an irregular outline. An offset metal shank remains on the back of the button. A flower-like impressed design on the front surrounds a raised circular central element and an irregular and off-centre hole. The function, if any, of this hole is not known.

The three plastic buttons (Figure 40) were associated with Railway Period disturbance. A purple four-hole button (21K65B5-5936) is 13 mm in diameter and has a mold seam encircling the outer circumference.

The second plastic button (21K58D3-5946) appears to be made of Bakelite, an early form of plastic developed in 1909 by American inventor Leo Hendrik Baekeland (Mark 1971:Vol.19:135). This button is hard, brittle, and painted in a mottled pattern of tan and brown. The paint has worn from the surface in two areas, revealing the black material beneath. Two holes are drilled in a central depression. The button is 17 mm in diameter and was recovered from Railway Feature B.

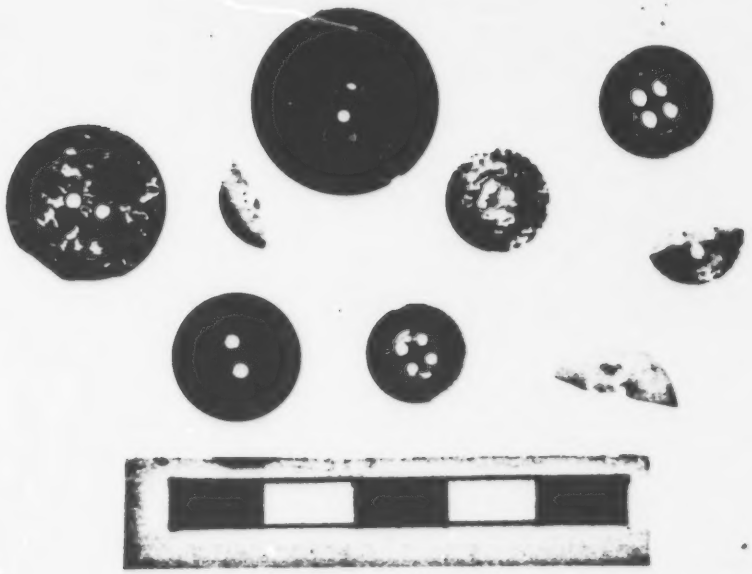


Figure 40: Glass, Plastic and Rubber Buttons

The remaining plastic button (21K57B8-5937) is 14 mm in diameter, black and highly polished. Also found in Feature B, it has two holes drilled through a central depression.

A single *hard rubber* button (Figure 40), 21K58B6-4497, was excavated from Pre-Railway/Post-1826 Flood level 21K58B6. On one side, it has a double groove molded around the rim, while the opposite side bears the words "N.R. Co./GOODYEAR'S P=T. 1851". The inscription on this particular button refers to the development of "improved" hard rubber by the American inventor Nelson Goodyear in 1851. It was manufactured by the Novelty Rubber Company, which operated in New Jersey from 1855 to 1870 (Davis 1984). Hard rubber buttons appeared in the latter half of the 19th century.

Five buttons excavated in 1990 are made of glass (Figure 40). Four came from levels within Feature B, while one came from level 21K64E2. Their characteristics are as follows:

21K58B9-5943: Complete. Made from white glass with painted brown geometric design. Four holes. Diameter: 11.5 mm. Recovered from Feature B.

21K58B9-5939: Incomplete. White glass painted with black floral motif. Although only three holes are present, their orientation suggests this was originally a four-hole button. Measures 11.5 mm in diameter. Recovered from Feature B.

21K58C5-4386: Incomplete. White glass, no decoration. Only two holes remain, but their orientation suggests this was originally a four-hole button. No measurement possible. Excavated from Feature B.

21K58D3-5944: Incomplete. White glass, no decoration. Two holes present, but appears to have had four originally. Measures 15 mm in diameter. Found in Feature B.

21K64E2-5941: Complete. Four-hole button, 11 mm in diameter. Made from pink glass; no other decorative motif has been applied. Recovered from a level designated as Pre-Railway/Post-1826 Flood. This level contains a number of artifacts which date to the Railway Period, indicating some disturbance has occurred.

According to Davis (1984), glass buttons became popular in the second half of the 19th century after the development of pressed glass. Dating is difficult, as many 19th century design elements and manufacturing techniques were carried well into the 20th century.

6.5 Containers

This CPS artifact class includes artifacts such as metal cooking utensils, wooden and metal buckets, tin boxes, and any other wooden or metal artifact designed to contain material. It does not include containers made from glass or ceramic; these materials are classified as *Glass* and *Historic Ceramics* or *Native Ceramics* respectively. Similarly, containers carved from stone would be classified under *Lithics*.

Although no wooden container fragments were found during FPAP excavations in 1990, 53 metal container fragments were recovered. Fifty-two of these pieces came from Railway levels and one was excavated from a Fur Trade level.

Eighteen very small, badly rusted fragments of ferrous metal were removed from Railway level 21K54R1. One very large section of a metal container (21K58D3-4545) was recovered from level 21K58D3 in Feature B (Figure 41). Although badly rusted and bent, its closure appeared intact but unidentifiable due to surface rust (Figure 42). It was sent to Canadian Parks Service for conservation in the hope that the closure could be cleaned and identified. Thirty-two rusted fragments of similar thickness found in the same feature are almost certainly parts of the same container.

Figure 41: Container *in situ*, Feature B

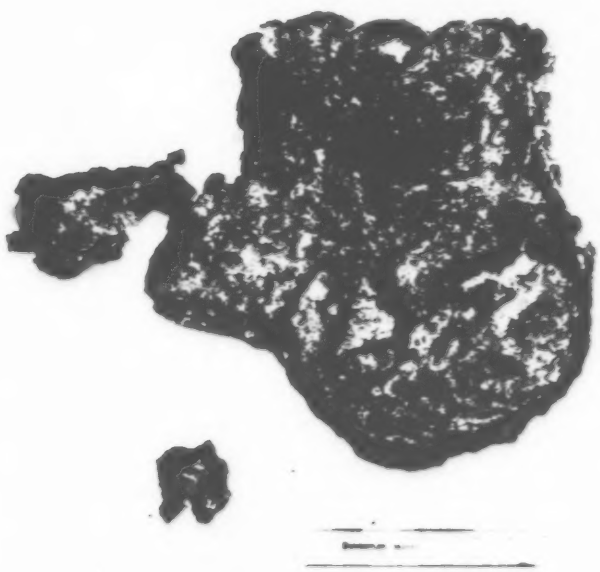


Figure 42: Metal Container after Removal from Feature B

A fragment of brass (21K54T6-5948) from Fur Trade level 21K54T6 is folded over along one edge, and may be a container rim.

6.6 Fasteners

Thirty-three fasteners of various types were recovered during the 1990 field season (Table 7). Two railway spikes (21K65D1-6037, 21K66B2-6043) and two large nuts (21K64E2-6034, 21K58D1-6033) were found in levels directly beneath the railway fill. The two nuts are hexagonal and square in shape respectively. A complete square-headed bolt, 5 cm long, was recovered from the Railway/Pre-Railway Post-1826 Flood interface. Two complete round washers were recovered from Railway levels and one complete washer was found in 21K65C6, a disturbed Fur Trade level.

Ten galvanized, machine-made fence staples were found in various levels in Feature B. These rusted staples are identical in both size and shape to staples still in use today.

Event	Spikes	Nuts	Pins	Bolts	Screws	Staples	Washers	TOTAL
Railway					13	10	2	25
B&B Construction	2	2						4
Pre-Railway/ Post-1826 Flood			2	1				3
1826 Flood								
Fur Trade							1	1
TOTAL	2	2	2	1	13	10	3	33

Table 7: Distribution of Fasteners by Event

Two incomplete ferrous straight pins were recovered from Pre-Railway/Post-1826 Flood levels 21K65B3 and 21K58G4. Each consists of a head (1.5 mm in diameter) and a broken shank.

The 13 remaining fasteners are ferrous screws. Seven are complete and vary in length from 3.2 cm to 7.5 cm. Six are incomplete, consisting of either a head and partial shank or shank only. All have threaded shanks and all recovered heads are slotted. All come from areas associated with Railway disturbance, primarily Feature B.

6.7 Glass

A total of 1,150 glass fragments was recovered during the 1990 excavation season (Figure 43). Of these, 117 sherds were so fragmentary that form and/or function could not be determined. The remaining 1,033 sherds consisted of 9 lamp chimney fragments, 5 glass buttons (Section 6.4), 2 pieces of pressed glass, 149 bottle fragments, 864 fragments of window glass, a possible vessel handle, 2 railway lantern fragments and a complete glass doorknob.

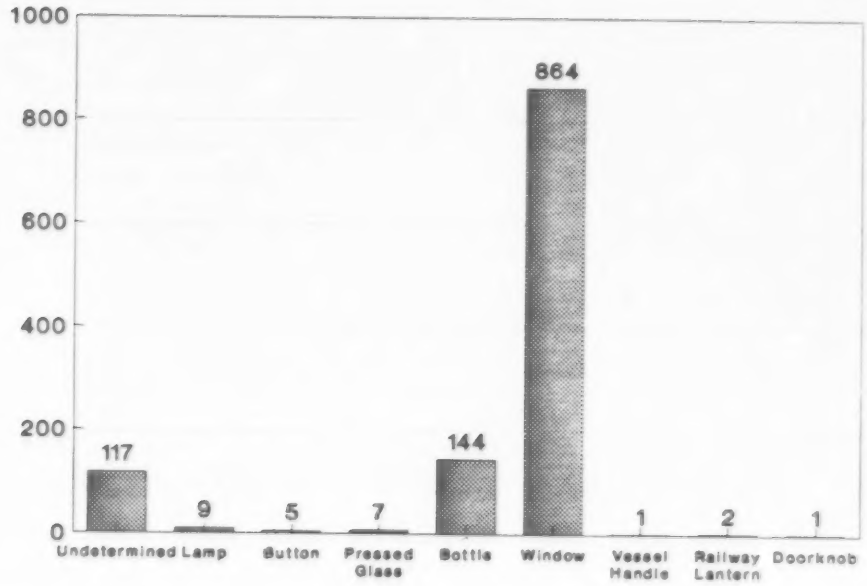


Figure 43: Total Glass, All Levels

6.7.1 Glass Containers

One hundred fifty-one (151) fragments of container glass were recovered during the 1990 season. Of these 2 fragments are pressed glass, and 149 are bottle sherds (Table 8).

Event	Pressed Glass	Bottle Glass				TOTAL
		Body	Finish	Base	Neck	
Railway		61	5	4	2	72
B&B Construction		3		4	1	8
Pre-Railway/ Post-1826 Flood	2	44	3			49
1826 Flood		1				1
Fur Trade		21				21
TOTAL	2	130	8	8	3	151

Table 8: Distribution of Container Glass by Event

6.7.1.1 Pressed Glass

Pressed designs in glass are produced using a mold and plunger. A glob of hot glass is dropped into the mold; a plunger is then introduced, forcing the molten glass into conformity with the patterned inner surface of the mold. The inside surface of the object is smoothed by the plunger (Jones *et al.* 1989:33).

Two pressed glass fragments (21K54Q2-6848, 21K58B7-6832), decorated in a geometric pattern, were recovered from Pre-Railway/Post-1826 Flood and Railway levels respectively. Sherd 21K54Q2-6848 is decorated in a motif known as *Wheel* (Stevens 1982:90). This pattern appears on numerous 19th century vertical wick lamps, and consists of a pressed fan-like design within a raised circular border. The very slight curve of this piece suggests it may have come from the base rather than the body of a lamp.

Pressed glass fragment 21K58B7-6832 is decorated with a series of small impressed diamonds. Each diamond has a slightly raised " X" within. Two impressed, slightly curved lines appear along one edge of the sherd. This pattern has not been identified.

6.7.1.2 Bottles

One hundred forty-nine (149) fragments of glass were identified as bottle fragments. One hundred thirty (130) of these fragments are very small body sherds with no distinctive markings. The remaining 19 fragments are neck, base and finish sherds (Table 8) (Figure 44).

Four bottle finishes have been reassembled (Figure 45). All have small portions of bottle neck remaining. Marks left in the glass during the manufacturing process indicate that three of these four vessels were BIMAL (blown-in-mold, applied lip) manufacture (Chopping 1978:11). The fourth (21K57B8-6903) appears to be part of a machine-made vessel.

Represented by a single light blue sherd, finish 21K57B8-6903 is from Feature B. No seam is evident at the juncture of finish and neck, but striae and air bubbles present within the glass are continuous from neck to finish. This suggests this vessel was formed in a fully automatic process and post-dates 1903 (D. McLeod 1991:pers. comm.)

A second finish (21K100A1-7404), composed of translucent aqua glass, was reassembled from two fragments found in levels 21K58B6 and 21K58B8 (Feature B). This one-part finish has a patent lip, a kind used widely on small-mouthed and medicine bottles manufactured during the 19th and 20th centuries (Jones *et al.* 1989:79). Patent lip finishes consist of a lip only, with no string rim present. Although the remaining portion of neck shows no mold seams, the vertical orientation of air bubbles indicates the glass was blown into a mold prior to application of the finish. Flow lines on the finish proper indicate it was made by a finishing tool. The seam between finish and neck has the uneven blobby appearance typical of applied finishes.

The third finish, 21K55U5-6886, was reconstructed from three sherds found in Pre-Railway/Post-1826 Flood level 21K55U5. A small amount of the vessel neck is present. Made of translucent, nearly colourless glass, this blown-in-mold vessel appears to have been formed by the same process as 21K100A1-7404. The applied finish has been made using a finishing tool, and consists of both a lip and a small string rim. One faint mold seam is visible on the extant neck portion.

The last of the finishes recovered in 1990 (21K57B7-6928) is also the most complete. Recovered from Feature B, it is made from transparent, light green glass. It consists of a deep lip and a well-formed string rim. The orientation of air bubbles and striae in the remaining neck portion suggest it was formed in a mold. Two distinct mold seams are visible on the bottle neck. Like finishes 21K100A1-7404 and 21K55U5-6886, a distinct and irregular seam running between finish and neck indicates the finish was applied to the bottle neck, rather than manufactured as one piece with the neck.

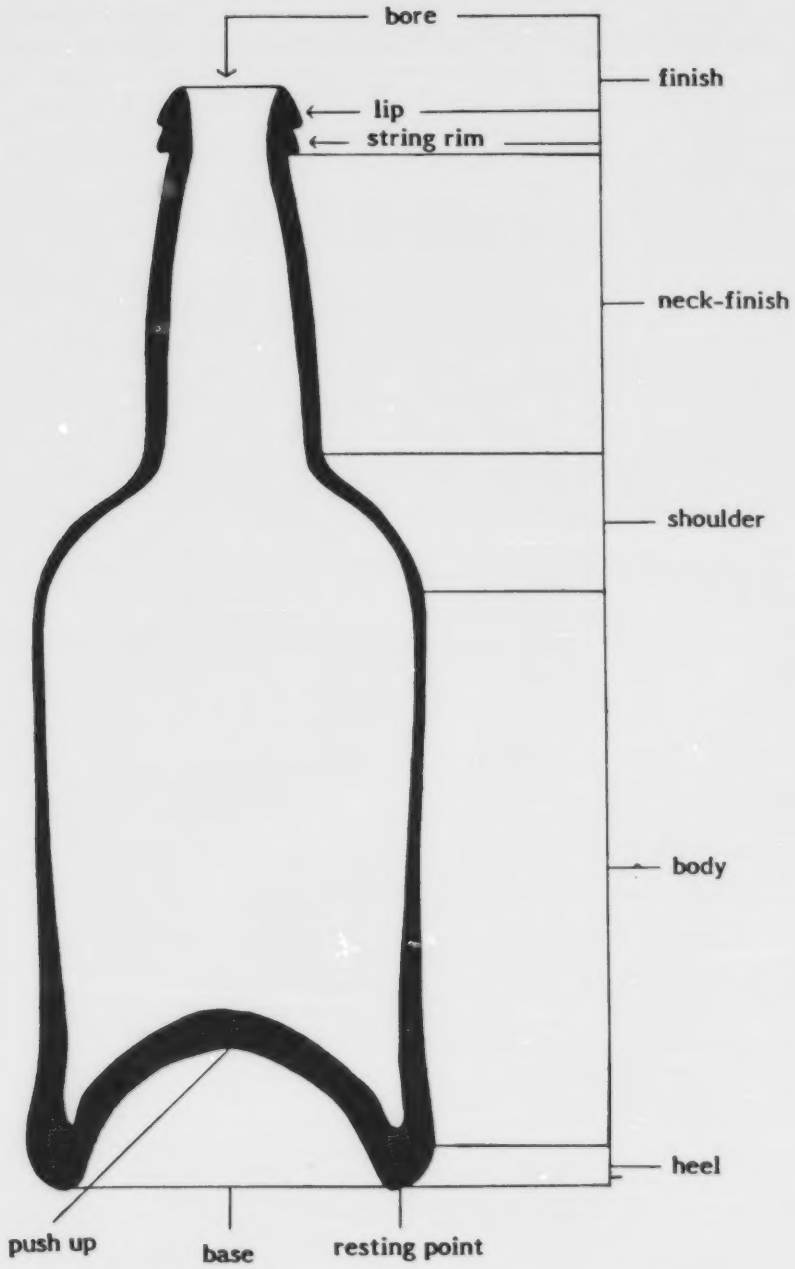


Figure 44: Parts of a Bottle (from Jones *et al.* 1989:77)

Figure 45: Bottle Finishes

Two vessels were partially reconstructed from some of the 149 bottle fragments recovered. An incomplete base and part of the body from a Blackwoods beverage bottle (21K100A1-7406) were reconstructed from seven fragments found in levels 21K54S1 and 21K54J5, designated as B&B Construction and Fur Trade levels respectively. Their apparent temporal separation is accounted for by the fact that level 21K54J5 lies adjacent to an area of extensive rodent disturbance in units 21K53K and 21K53L. These fragments were likely brought down from overlying levels by rodent action. They were so badly crazed by burning that a pencil rubbing was necessary to make out the letters embossed upon the body. These letters read "...INING/...ND MUST/...N EMPTY/...IMITED". The base of the bottle bears the Blackwoods trademark "*BB*" in a triangle. The words "BLACKWOOD" and "WINNIP..." encircle the triangle.

This bottle was manufactured in a two-piece post mold (Chopping 1978:108). Bottles manufactured by this method were formed in a two-piece, hinged mold fitted with a separate base.

The two most common types of separate base found on North American archaeological sites have been produced by post bottom and cup bottom molds. Post bottom molds have a raised area centred in the bottom part of the bottle mold [which] forms all or part of the bottle base (Jones *et al.* 1989:45). Cup bottom molds, by comparison, are formed when molten glass is forced into a cup-like depression cut into the bottom plate of the mold.

The second reconstructed vessel (21K100A1-7400) contains 23 colourless sherds from levels 21K58D2, 21K58D3, 21K58C3, 21K58C1, 21K57C2 and 21K57C3. Another 38 sherds recovered from these levels appear to be from the same bottle, but could not be attached.

Bottle 21K100A1-7400 (Figure 46) was manufactured in a two-piece hinge mold and is rectangular in planview. Mold seams are well-hidden in two corners of the flat-sided, recessed-panel bottle. Although symmetrical on the outside, glass is unevenly distributed on the inside of the bottle, a common feature of bottles made in two-piece hinge molds (Jones *et al.* 1989:26). Two-piece molds entered into common usage in the latter part of the 18th century, but by the end of the 19th century, their popularity was greatly diminished. In general, bottles manufactured by this method date between 1750 and 1880 (Jones *et al.* 1989:27).

Figure 46: Patent Medicine Bottle Embossed With "DR. AGNEW'S CURE FOR THE HEART"

This particular bottle bears the phrase "DR. AGNEW'S CURE FOR THE HEART" in the recessed front panel. An "8" is embossed upon its base, which was manufactured in a post mold. Unfortunately, efforts to date this patent medicine bottle have been unsuccessful.

6.7.2 Lamp Glass

Nine fragments of lamp chimney glass were found in levels 21K57B8 and 21K58B9. Although both of these levels are assigned to the Fur Trade Period, 21K58B9 lies directly beneath Feature B and is likely part of this amorphous refuse pit.

Fragment 21K57B8-6905 (Figure 47) is a portion of a lamp chimney rim. Its scalloped, pie-crust edge appears to have been made using a crimping machine. These tools were patented in 1877 (Woodhead *et al.* 1984:62).

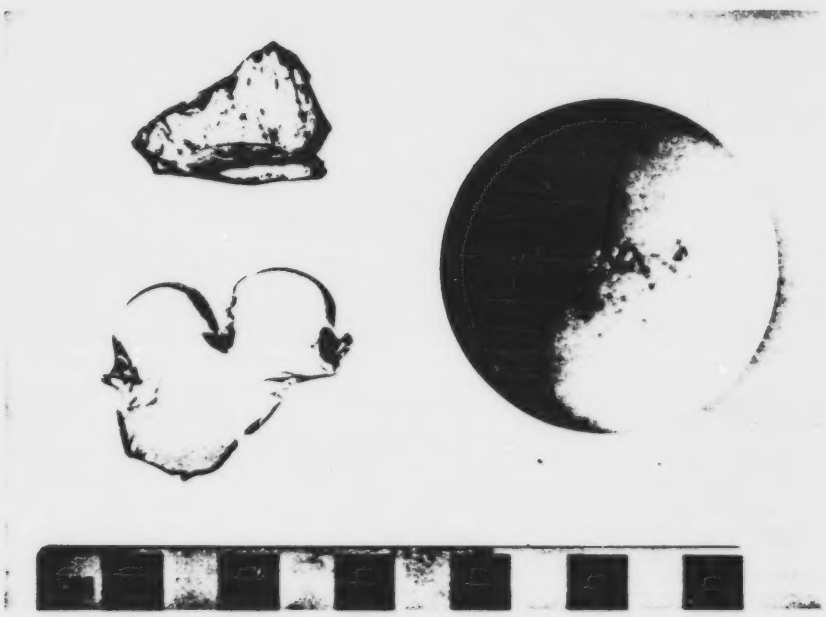


Figure 47: Miscellaneous Glass Artifacts

6.7.3 Windowpane

A total of 864 fragments of flat pane glass were excavated during the 1990 field season. With the exception of one small aqua fragment, all sherds were colourless. None were reinforced or patterned.

6.7.4 Miscellaneous Glass

A smooth, tubular fragment of amber glass (21K58C1-6835) was recovered from B&B Construction level 21K58C1. Measuring 1.9 cm in length, its curved shape suggests it may have been used as a vessel handle.

Two fragments of transparent red-coated or red-flashed clear glass (21K66D2-6892, 21K66E2-6830) were excavated from Pre-Railway/Post-1826 Flood levels. A number of these fragments were found in 1989 and identified as sherds from red railway lanterns (Kroker, Greco *et al.* 1990:72). Since they were recovered very high in the stratigraphic column, they likely originated in the railway fill overlying these units.

Finally, a complete, undecorated white glass doorknob (21K57C7-6910) was recovered from 21K57C7, a level which lies beneath Railway Feature B. This flattened, round doorknob is 57 mm in diameter and 22 mm thick. Evidence suggests this level has been disturbed and may be part of the feature.

6.8 Historic Ceramics

Excluding bricks, 158 Historic Ceramic sherds were recovered in 1990. Eighty-six of these fragments were coarse brown, glazed sewer pipe associated with the Railway Period and found throughout the East Yard. One fragment was ivoryware and seventy-one (71) pieces were earthenware (Table 9).

The small ivoryware body sherd (21K65D3-6569) measures 7 mm by 6 mm. Internally, this sherd is a light cream colour. A thin, yellow glaze has been applied to both sides. Ivoryware was popular from the late 19th century to the early 20th century as tableware and toiletware (Parks Canada Coding Manual 1982).

One very small body sherd of red earthenware (21K51F5-6568), 15 mm by 4 mm, was found in a level assigned to the Fur Trade Period. The outer surface of this sherd is unglazed. A few spots of white material, possibly ash, adhere to the surface. Small particles of temper appear to consist of hardened particles of clay of the same colour.

One piece of molded relief, clear-glazed white earthenware (21K57C6-6593) was recovered. Apparently a body sherd, it has spalled from a larger piece, and measures 13 mm by 12 mm. The small size of this fragment makes identification of the motif impossible.

Nine historic ceramic sherds (Figure 48) are underglaze transfer-printed. Three are from levels designated Pre-Railway/Post-1826 Flood, two were excavated from 1826 Flood levels and four from Fur Trade levels. All are white earthenware, and all are less than 7 mm square.

The three Pre-Railway/Post-1826 Flood transfer printed sherds were recovered from levels 21K64B3, 21K65B3 and 21K54R4 respectively. All are body sherds. The first (21K64B3-6601) is a purple transfer print, the second (21K65B3-6603) is green, and the third (21K54R4-6596) is blue. The latter sherd measures only 4 mm by 2 mm. All are too small for pattern identification.

One of the two printed ceramic fragments removed from 1826 Flood levels (21K55U6-6575) is a small body sherd of flow blue on white earthenware recovered from level 21K55U6. The second, 21K65B4-6578, is also white earthenware and is decorated with a green transfer print. Although the small size of this body sherd makes identification uncertain, it may be part of a Spode and Copeland border pattern called *Lily* (Sussman 1979:138). This pattern (Figure 48) was manufactured from 1837 to the 20th century.

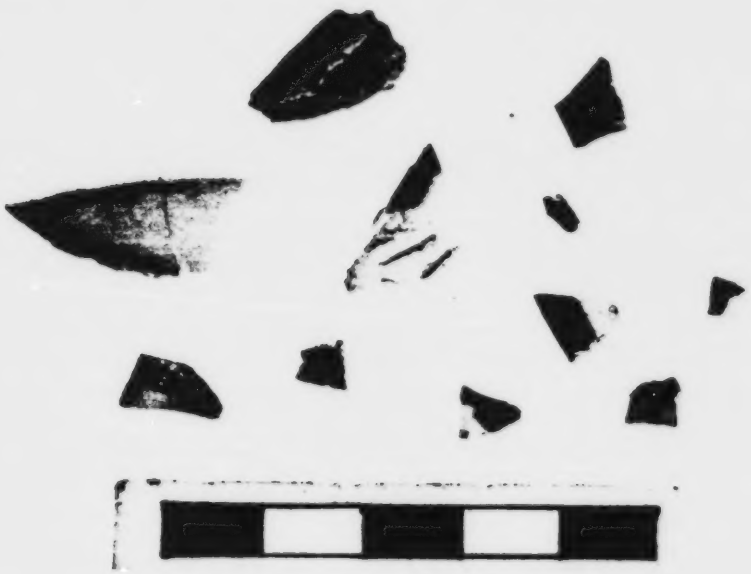


Figure 48: Historic Ceramics

Event	Level	Molded White	19th C Red	Transfer Print	Flow Blue	Plain White	Ivoryware	TOTAL
Railway	21K58B8					3		3
B&B Construction	21K65D3						1	1
Pre-Railway/ Post-1826 Flood	21K54Q2					1		1
	21K54R4			1				1
	21K54T2					1		1
	21K55R3					1		1
	21K57D5					2		2
	21K57F2					37		37
	21K58B6					1		1
	21K64B3			1				1
	21K64D3					1		1
	21K65B3			1				1
	21K66E2					1		1
1826 Flood	21K54S6					1		1
	21K54U5					1		1
	21K55S6					2		2
	21K55U6				1			1
	21K57C6	1						1
	21K65B4			1				1
Fur Trade	21K51F5		1					1
	21K53H13				2			2
	21K54T6					1		1
	21K54U6					2		2
	21K55R7					2		2
	21K55S7					3		3
	21K56U5			1				1
	21K64D5			1				1
TOTAL		1	1	6	3	60	1	72

Table 9: Distibution of Historic Ceramics (Excluding Sewer Pipe) by Ware Type

The remaining four sherds of transfer printed white earthenware were recovered from levels designated Fur Trade. Two are body sherds measuring less than 5 mm in length. Sherd 21K56U5-6563 is decorated with a blue transfer print. The second sherd (21K64D5-6580) has a green transfer print applied. Neither pattern is identifiable.

The remaining two transfer printed Fur Trade Period sherds (21K53H13-6573) fit together to form a rim sherd measuring 25 mm in length. The complete sherd is white earthenware decorated by flow blue transfer print. Although three blue leaves are visible along one edge, this pattern has not yet been identified.

The remaining 60 body sherds are plain white glazed earthenware, undiagnostic as to form and/or function.

6.9 Lithics

Fifty fragments of rock showing evidence of possible human modification or use were recovered during FPAP excavations in 1990. Thirty-three were non-cortical flakes that may have been produced by the shaping or retouch of a stone tool. The remaining seventeen pieces consisted of two bifacially-retouched fragments, five pieces of mica, one piece of burnt granite, eight rock fragments of possible structural origin and one small piece of limestone (Table 10).

Event	Non-cortical Flake	Bifacially Retouched Flake	Mica	Heated Granite	Structural?	Limestone Fragment	TOTAL
Railway Feature B	3		5	1	7	1	16
B&B Construction							
Pre-Railway/ Post-1826 Flood	3	1					4
1826 Flood	4	1					5
Fur Trade	23				1		24
TOTAL	33	2	5	1	8	1	50

Table 10: Distribution of Lithics by Event

The 33 non-cortical flakes range from quartzite, a relatively coarse-grained material, through chert to chalcedony, a very fine-grained, glassy rock which fractures in a predictable way and exhibits conchoidal fracture. None of these flakes show signs of further retouch or modification. Twenty-three came from Fur Trade levels, three were found at various levels within Railway Feature B, three were excavated from Pre-Railway/Post-1826 Flood levels, and four came from 1826 Flood levels.

Two of the twenty-three non-cortical flakes excavated from Fur Trade levels are made of fine-grained chert and show evidence of use-wear. Although neither has been retouched, both have the faintly serrated edges typical of utilized flakes. The first, 21K65D4-6232, is of the same translucent, honey-coloured chert as gunflints 21K54D6-4518 and 21K56G10-6231 (Section 6.1), and may be a by-product of gunflint manufacture or secondary use. The second (21K55J9-6234), excavated from Feature I, is a greyish tan opaque chert.

Two bifacially-retouched fragments (21K56R6-6233, 21K66C2-6209) were recovered from levels designated 1826 Flood and Pre-Railway/Post-1826 Flood respectively. These small fragments are a smoky grey, translucent chalcedony, and may have been broken from the edge of a gunflint or strike-a-light.

Five fragments of mica were recovered from Feature B. This rock is recognizable by its transparent to translucent appearance, flexibility in thin fragments, and its tendency to split along horizontal lines of cleavage, resulting in a platy appearance. Small sheets of mica were formerly used as windows in furnaces prior to the development of heat-resistant glass (Pough 1953:259; Chesterman and Lowe 1978:532).

A single piece of granite (21K57B7-6218) recovered from Feature B appears to have been scorched and reddened by exposure to heat. Whether this rock was part of a hearth or fireplace or was simply burned in some earlier event (e.g., the destruction of Fort Gibraltar I) is unclear.

Eight pieces of rock recovered from levels 21K54U11, 21K57C7, 21K58B7 and 21K58D3 are possibly of structural origin. With the exception of Fur Trade level 21K54U11, all of these levels are within Feature B. Four fragments are granite, three are limestone, and one is a dark red sandstone. All fragments are incomplete and have a very squared off appearance, suggesting they may have been hewn for use as building elements.

A single small fragment of limestone was recovered from Railway level 21K57C7. This fragment is very angular but shows no obvious evidence of modification.

Artifact 21K57C4-6225 is a modified fragment of basalt. It has been ground into a smooth cylindrical pencil 6 mm in diameter. It is 53.5 mm in length and broken at one end. The other end has been ground to a faceted point which still exhibits rasp marks. The function of this implement is unknown.

6.10 Metal (General)

One hundred forty-four (144) artifacts excavated in 1990 were classed as *Metal (General)*. This class includes metal artifacts other than containers, nails, fasteners, buttons and arms and ammunition. Of the 144 metal artifacts, fifty-one were unidentifiable scraps (ferrous metal, copper and lead) distributed uniformly throughout all levels. Also of undetermined function were a single small ferrous hook, a large ferrous ring, one ferrous coil spring fragment, one large eyelet and one ferrous rod. Most of these artifacts came from Railway Feature B. A single D-ring, typical of those used in draught harness, was also found in Feature B. Fifty-two incomplete fragments of ferrous wire were also found. Eight metal buttons are discussed in Section 6.4.

6.10.1 Clothing

Two brass eyelet fragments (21K56S3-6947) and a single hook fastener (21K57G7-6995) are likely from a boot or shoe. These artifacts are from Pre-Railway/Post-1826 Flood and Fur Trade levels respectively. Sixteen eyelets (21K57B9-6683) were recovered from Feature B. These flat, circular artifacts are composed of a layer of heavy cloth bonded to a thin wafer of heavily patinated tin.

6.10.2 Adornment

A total of five brass tinkling cones (Figure 49) were excavated from levels 21K54S9, 21K55S7, 21K55S10, 21K57H10 and 21K58G13, all classified as Fur Trade. Manufactured from trapezoidal blanks, these cone-shaped adornments were attached to clothing by thin straps of leather. According to Stone (1974:134), although tinkling cones were popular with indigenous groups as trade items, they appear to have been worn by both Europeans (civilians) and Natives alike. The five tinkling cones recovered in 1990 range in length from 9 mm to 21.5 mm.

A circular pewter decoration (21K57C4-4496) of unknown origin (Figure 50) was recovered from Feature B. It is 12.5 mm in diameter and depicts a stag surrounded by grass and trees within a beaded border. The front legs of the stag are missing. The back of this artifact is flat and no ring or other means by which it could have been attached to a necklace or bracelet is present. This suggests 21K57C4-4496 is some form of applique rather than a pendant or other type of personal adornment.

Figure 49: Brass Tinkling Cones

Figure 50: Pewter Applique

6.10.2.1 Finger Rings

Among the most intriguing artifacts recovered during the 1990 excavation season are five finger rings of the type known as *Jesuit rings*, or *trade rings*.

According to Cleland (1972:202), Jesuit rings are found on mid-17th to mid-18th century North American sites of French occupation or influence. The association of these rings with French Jesuit missions, particularly those established in the Great Lakes region, is documented in historical records (Cleland 1972:202). Although not uncommon on early historic sites, Jesuit rings have received scant treatment in archaeological literature.

Little is known regarding the origin and function of Jesuit rings. Cleland (1972) hypothesizes they were originally sacred objects that evolved into secular items of trade. Pupils at 17th century missions were rewarded with these brass rings if they were able to correctly repeat Bible lessons, but at the 18th century site of Fort Michilimackinac, few of the 72 Jesuit rings recovered came from either the Church or Priests' House. This discovery supports the theory that by the 18th century Jesuit rings had emerged as secular trade items (Cleland 1972:202).

The majority of Jesuit rings were made of a single-piece brass band and flat bezel or face. Stylistic variation resulted not only from *temporal drift*, but from design changes made by the individual maker or engraver, so that no two rings were identical. While earlier rings bore a raised, cast design upon a round or oval bezel, later derivatives were typified by an incised or stamped design (or combination of the two) upon octagonal or heart-shaped bezels. Bands varied from tapered forms with single or double ridges adjacent to the bezel to untapered forms having no decoration. The earliest design motifs appear to have been strictly religious in nature and are typified by hearts, crosses and other elements having religious connotations. Letters engraved on the bezels likely represent Latin religious phrases (e.g., the letters "AM" representing the phrase Ave Maria (Wood 1974:87)). Ring design appears to have become simplified through time and was reduced to one or two initials.

Presently, Jesuit rings can only be dated in a general sense. However, attempts have been made to trace their stylistic evolution. Cleland (1972) has identified three prototypes from which he believes the majority of later design motifs evolved. Within his classification, each prototype and its later derivatives form a series. These series, named for the prototype design, are termed the L-Heart, Double-M and IHS series.

Jesuit rings came into use in the mid-17th century (Cleland 1972:207). Cleland (1972:202) has suggested that round or oval bezels date roughly to the period from 1624 to 1700, while octagonal and heart-shaped bezels became popular after 1700. Based upon studies of Jesuit rings from a number of American sites, Mason (1986:208) feels heart-shaped bezels pre-date octagonal bezels and the octagonal form was, in fact, the final shape taken by these rings.

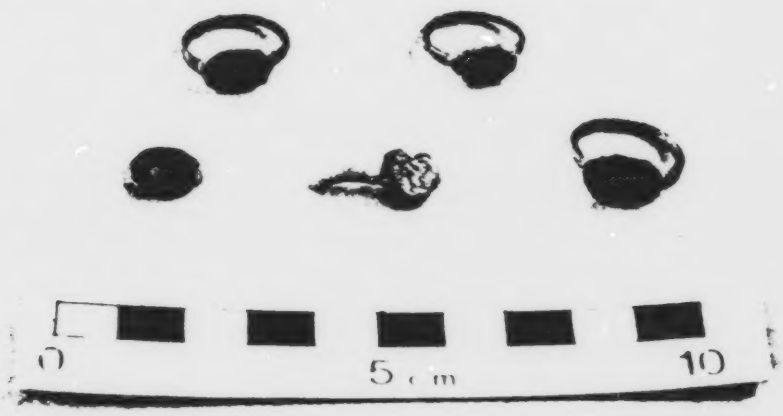


Figure 51: Jesuit Rings

The five rings recovered during 1990 FPAP excavations (Figure 51 and 52) are typical of later Jesuit ring design. Two of the rings came from Feature I and two from Feature Q, both Fur Trade cellar depressions. The fifth ring was found in the 1826 Flood zone, directly above Feature I. All are brass, and bezel measurements vary from 14 mm in width and 10 mm in length to 10 mm in width and 8 mm in length. Four have roughly octagonal bezels, while a single specimen, 21K56G12-6970, is heart-shaped (Figure 53). All are decorated with incised initials. Dimensions range from 10 mm to 14 mm wide and 8 mm to 12 mm long. Three of the rings are complete, one consists of a complete bezel and roughly one-third of the band, and the last (21K57E5-6968) consists of the bezel only. Where bands are present, they are undecorated and untapered.

Three rings (21K55G9-4495, 21K58G13-6971 and 21K56G12-6970) bear the initials "H," "D" and "FI" respectively (Figure 53), and fall within Cleland's IHS series. Ring 21K57E5-6968 has an "M" incised upon an octagonal face and belongs to the Double-M series. The fifth ring, 21K58G13-6969, decorated with an "N" on an octagonal bezel, falls within Cleland's L-Heart series.

Although the initials on four rings appear to have been applied strictly by incision, the letter "D" on ring 21K58G13-6971 appears to have been applied by a combination of incising and stamping. On all rings, the horizontal and diagonal elements of the initials are straight and deeply-incised, while vertical elements are much fainter and of irregular outline. This is due primarily to the method by which Jesuit

Figure 52: Jesuit Rings

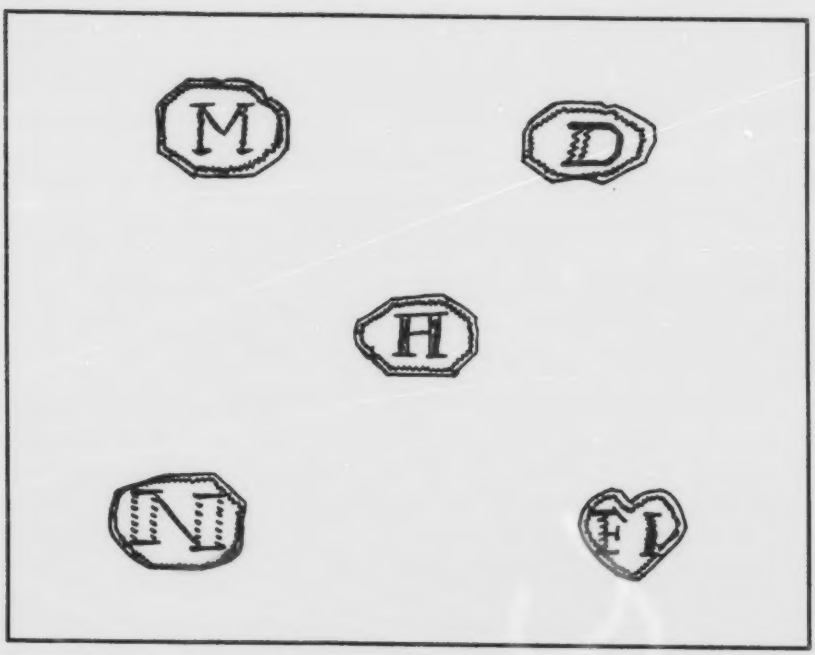


Figure 53: Jesuit Rings, Bezel Forms

rings were inscribed, as well as to the skill of the engraver. Although lines could be etched clearly, the engraving tool was more frequently rocked or walked across the surface of the bezel in order to produce a distinctive zigzag line (Mason 1976:114). The same zigzag line appears as a border around the bezel circumference on all five rings (Figure 53).

Research to date indicates that, for unknown reasons, the manufacture and distribution of Jesuit rings appears to have stopped after approximately 1760 (Cleland 1972:202). Although Fort Gibraltar I was not established until 1810, these metal rings are of relatively durable composition and their use life could be expected to extend far beyond their date of manufacture. Many fur trading companies routinely distributed large numbers of ornamental rings as trade goods, and Jesuit rings may have been a standard item of trade at Fort Gibraltar I. Similar rings have appeared in artifact assemblages from Fort Riviere Tremblante (1791–1798) in Saskatchewan and from Pine Fort (1768–1811) in Manitoba (E. L. Syms 1991:pers. comm.).

Alternately, it is possible the distribution of these rings occurred prior to the construction of Fort Gibraltar I. Montreal-based North West Company traders were not the first Europeans to visit The Forks; French traders had established and inhabited Fort Rouge from 1738 to 1749, more than half a century earlier. It is therefore possible that the Jesuit rings found in 1990 were distributed by French traders at The Forks prior to the establishment of Fort Gibraltar I.

6.10.3 Lighting

Artifacts 21K58C4-6983 and 21K58D2-6987 are pieces of a vertical wick lamp, a form of lighting introduced in the 18th century (Figure 54). Although early forms used a variety of liquid fuels, including whale oil and lard, the introduction of kerosene (coal oil) lamp fuel in 1846 rendered all other fuels obsolete (Woodhead *et al.* 1984:48).

Since the operation of vertical wick lamps relied upon the capilliary movement of liquid fuel up a wick, the wick holder was mounted at the top of the lamp in a burner. Tightly-fitted burners are considered diagnostic of vertical liquid fuel lamps (Woodhead *et al.* 1984:48). Early burners were simple fabrications of a wick tube inserted into a collar which screwed onto the fuel reservoir.

After the introduction of kerosene lamps, a variety of more complex burners were developed. Most were made of brass and consisted of a vertical wick tube, a convex air deflector and an air distributor plate screwed into a collar mounted on the reservoir. Most kerosene lamps also contained a glass chimney which isolated the flame and created an air current to fan it.

Recovered from Feature B, artifact 21K58C4-6983 is a typical post-1846 vertical lamp air deflector. Constructed of brass, its function was to further direct the air

Figure 54: Vertical Wick Lamp Collar and Air Deflector

current entering the chimney toward the flame (Woodhead *et al.* 1984:48). The lamp wick passed through an oval aperture in the top of the deflector.

Artifact 21K58D2-6987 is a complete lamp collar. Made of copper, it would have been fastened securely to the fuel reservoir. The burner would, in turn, have been screwed into this collar. The discovery of both the deflector and the collar in adjacent units within Feature B suggests they may have been parts of a single lamp.

6.10.4 Hardware

An incomplete padlock (21K57C4-6976) was recovered from Feature B. This lock has the letters "US" stamped upon it, and is the type of lock formerly used by railway employees to lock both equipment sheds and the manual switching mechanisms used prior to the introduction of electronic rail switches (Figure 55).

A single cast, threaded pipe fitting (21K54Q9-5949) was excavated from Fur Trade level 21K54Q9. The presence of a machine-made pipe fitting in a Fur Trade level suggests disturbance has taken place in this area.

Figure 55: Padlock

Two pieces of door hardware were excavated from Railway Feature B. The first, a ferrous door latch bar (21K58C5-6990), is 10.7 cm in length (Figure 56). One end forms a circular ring. The complete latch bar is narrowest at this end, measuring only 10 mm in width, but widens slightly toward a maximum width of 15 mm at the opposite end. Although badly corroded, an unidentifiable recessed design is visible on one side of the bar. This latch bar appears almost identical to one recovered at Fort Michilimackinac, Michigan (Stone 1974:Figure 146). Latches of this type were mounted horizontally on the door. A nail through the circular ring secured the bar to the door and allowed it to rotate up or down. Iron thumb lifts would have been used to push the bar up and open the door (Stone 1974:235).

The second piece of metal door hardware (Figure 57) recovered from Feature B is a rectangular cast iron plate (21K58C5-6993) or *escutcheon.* A framed leaf motif is clearly visible upon the face. A doorknob shaft would have passed through a square aperture, 5 mm in width, at the top of the plate. Five circular holes in the plate would have accommodated nails or screws, thereby securing it to a door. Although incomplete, it is 182 mm in length and 50 mm in width. It is possible this plate and the white glass doorknob also recovered from Feature B were once part of the same mechanism.

An incomplete shovel handle (21K58C5-4441) was recovered from Feature B. It consists of a hollow, ferrous shaft splayed at one end where it formerly attached to the blade of the shovel. This fragment is 35.2 cm in length and 2.5 cm in diameter.

Figure 56: Door Latch Bar

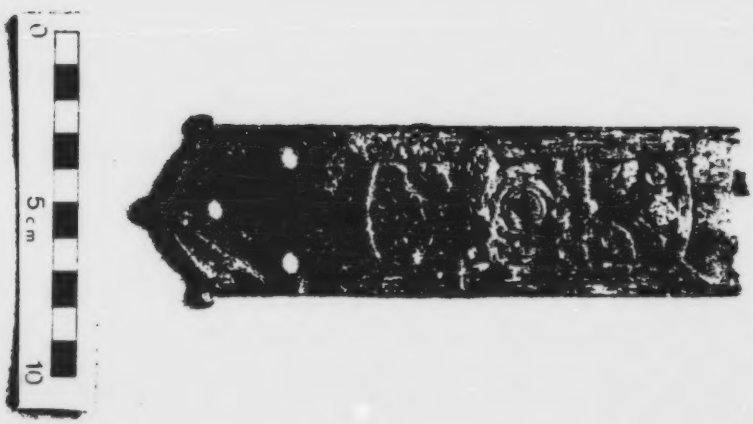


Figure 57: Door Escutcheon

6.10.5 Miscellaneous Metal

A small round metal token (21K58B9-6937) was found in Feature B. It has a hole through its middle and is badly corroded. It is 13.5 mm in diameter. The words "...BRIDGE CO..." are faintly visible around the circumference of one face. No lettering or design elements are discernible on the opposite face.

A complete iron barrel hoop (21K58C5-4548) was excavated from Railway Feature B. The absence of any other barrel hoops above or below this hoop and any surrounding wood fragments or wood staining indicates that it was deposited by itself rather than as part of a complete barrel.

Two large rings rusted together (21K54S1-6962) were recovered from a level designated as B&B Construction. The larger ring is ferrous metal and measures 54 mm in diameter. It passes through the smaller ring, which is brass and measures 27 mm in diameter. The function of these rings is unknown.

A serrated brass fragment (21K54Q13-6939) was recovered from a Fur Trade context. This specimen resembles a similar artifact found in 1989 (Kroker, Greco *et al.*1990:Figure 56). As yet, the function of these items has not been determined.

A complete iron knife blade (21K64E5-7008) was recovered from level 21K64E5. This Fur Trade level consisted entirely of a thick ash deposit. The knife blade is heavily encrusted with ash and appears to have been burned. It is 22 mm wide and 130 mm long. Its width increases slightly from 17 mm at the butt or rear of the blade to a maximum of 22 mm before narrowing again to the point of the blade. The bottom edge of the blade rises steeply to form a rounded, upturned cutting edge (Figure 58). Raised rivets and a protruding *tang* at the butt of the blade suggest it was formerly secured to a handle, possibly wood or bone.

Similar knife blades identified as iron trade knives have been recovered at Fort Michilimackinac (Stone 1974:262) and at Rock Island, Wisconsin (Mason 1986:199). One specimen from Rock Island is almost identical in size and shape to the blade recovered from The Forks. It is a French clasp knife and dates to ca. 1670 to 1730 (Mason 1986:Plate 14:40).

Figure 58: Selected Fur Trade Metal Artifacts

6.11 Nails

A total of 418 nails was recovered during the 1990 excavation season. All are ferrous and most are severely rusted, making identification difficult.

Historically, nails have been manufactured by three temporally distinct methods. The first (and earliest) of these techniques is known as the *hand-wrought* method. In North America, hand-wrought nails were widely employed throughout the 17th, 18th and 19th centuries (Nelson 1968:6). As the name implies, hand-wrought nails were formed by working metal on a forge. Thirty-eight wrought nails were recovered (Table 11).

The second of these techniques is known as the *sheet-cut* method. Production of machine-made, sheet-cut nails began ca. 1790. This mechanized method greatly increased the speed with which nails could be produced; a large number of nails could be cut or punched simultaneously from a single sheet of metal. Although the heads of early varieties were added using a nail heading tool, by 1815 the entire production process had become mechanized (Nelson 1986:8). In the Red River area, including The Forks, sheet-cut nails likely became common after 1860, when river steamboats could transport large quantities of American goods (D. McLeod 1991:pers. comm.). Three hundred thirty-five sheet-cut nails were found.

The third and most recent production method is *drawn* or *wire-cut* manufacture. Nails formed by this method are cut from a length of extruded wire with the addition of a head in a separate mechanized operation. Production of drawn nails began about 1850, became prevalent about 1900, and continues to this day (Nelson 1968:10). Nine drawn nails were recovered.

Thirty-six nails (Table 11) are so badly corroded that manufacturing technique is impossible to determine. One of these, 21K57C1-4346, recovered from B&B Construction level 21K57C1, has an L-shaped head indicating it was either wrought or sheet-cut.

Event	Sheet-Cut	Wrought	Drawn	Undetermined	TOTAL
Railway	66	3		6	75
B&B Construction	8			13	21
Pre-Railway/ Post-1826 Flood	174	25	4	10	213
1826 Flood	8	2			10
Fur Trade	79	8	5	7	99
TOTAL	335	38	9	36	418

Table 11: Distribution of Nails by Manufacturing Technique

Although a similar number of nails (477) were found in 1989, their type distribution differs dramatically. Only 38 of the 418 nails recovered in 1990 were wrought, whereas 334 wrought nails were excavated in 1989. Three hundred thirty-five, or 80%, of the nails recovered in 1990 were of the machine-made or sheet-cut variety, compared with only 27% in 1989.

This difference is attributable primarily to the fact that a large number of the sheet-cut nails excavated in 1990 (32% of the total) were found in units 21K57C, 21K57D, 21K58B, 21K58C and 21K58D. These units are part of Feature B, a refuse pit dating to the Railway Period. This pit extends through Pre-Railway/Post-1826 Flood and 1826 Flood levels into Fur Trade levels, and contains a number of recent historic artifacts. Similarly, a further 34 sheet cut nails (8% of the total) come from adjacent units 21K57B and 21K58E. Further investigation may reveal that 21K57B and 21K58E are part of Feature B. This would bring the total percentage of sheet-cut nails recovered from the pit to 40% of the total nail assemblage, and would help to explain the apparent skew toward sheet-cut nails excavated during the 1990 season.

Apart from the concentration noted in the Railway refuse pit, nails were distributed relatively evenly over the excavation area, with slightly higher numbers recovered from units 21K54S, 21K55R, 21K64D, 21K64E, 21K65D and 21K65E.

6.11.1 Wrought Nails

Hand-wrought nails have shanks that are square to rectangular in cross-section, taper on all four side, and are usually more irregular in outline than sheet-cut and drawn nails. Of the 38 wrought nails recovered, 35 are common nails, one is a T-headed finishing nail and two are clasp nails.

6.11.1.1 Wrought Common Nails

Common or general use construction nails can take a variety of forms. Possible head shapes include flat square, flat circular and rosehead (Figure 59).

Fourteen of the wrought common nails excavated have flat square heads. A single incomplete specimen, 21K56R5-7286, has a flat circular head. This very large head is bent down on two sides of the shank. Three nails (21K58G13-7272, 21K66D6-7227 and 21K65E4-7333) are of the rosehead variety.

Seventeen incomplete wrought nails are headless (Table 12). One of these incomplete shanks, 21K58B8-7319, is spatulate in shape. Recovered from a level designated as Railway, it becomes both flatter and broader toward its tip, terminating in a chisel-shaped edge.

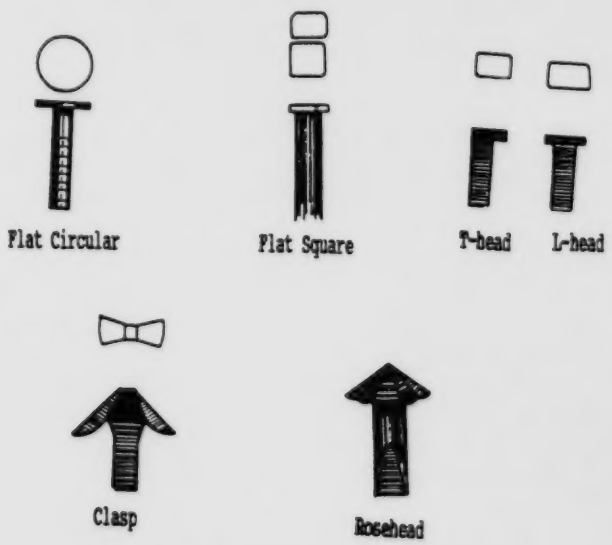


Figure 59: Forms of Nail Heads

Twenty-two of the wrought common nails recovered came from Pre-Railway/Post-1826 Flood levels, while eight were found in Fur Trade levels. Three were recovered from Railway levels, while only two were found in 1826 Flood levels (Table 12).

Event	Flat Square	Flat Circular	Rosehead	Headless	Unidentified	TOTAL
Railway	1			2		3
B&B Construction						
Pre-Railway/ Post-1826 Flood	9	1	1	11		22
1826 Flood	2					2
Fur Trade	2		2	4		8
TOTAL	14	1	3	17		35

Table 12: Distribution of Wrought Common Nails by Head Type

6.11.1.2 Wrought Finishing Nails

Finishing nails differ from common nails primarily in head size. They are generally smaller than common nails and are used when it is desirable to minimize the size of the nail head showing. These too can be wrought, sheet-cut or drawn. Head types include L-head, T-head, flat circular and flat square (Lunn 1985:155).

A single wrought finishing nail (21K64E2-7377) was recovered from a Pre-Railway/Post-1826 Flood level (Table 13). This complete example consists of a T-head (Figure 59) and a square shank. It is 48 mm in length.

6.11.1.3 Wrought Clasp Nails

Clasp nails (Table 14) are defined as wall and roofing nails, as the inverted V-shape of their head (Figure 59) is ideally suited for securing shingles, lathes and siding (Lunn 1985:156). Like common and finishing nails, they may be of sheet-cut, hand-wrought or drawn manufacture.

Both clasp nails recovered during the 1990 Forks Public Archaeology Project are hand-wrought (Table 14). Recovered from Pre-Railway/Post-1826 Flood levels 21K55U3 and 21K64C3, they are both complete. The first, 21K55U3-7328, measures 47 mm in length, while the second, 21K64C3-7225, measures 34 mm in length. Both have inverted V-shaped heads and square shanks.

Event	Flat Square	Flat Circular	L-Head	T-Head	Headless	Unidentified	TOTAL
Railway							
B&B Construction							
Pre-Railway/ Post-1826 Flood				1			1
1826 Flood							
Fur Trade							
TOTAL				1			1

Table 13: Distribution of Wrought Finishing Nails by Head Type

6.11.2 Sheet-Cut Nails

Of the total nail assemblage, the majority recovered (335) are sheet-cut (Table 11). While 319 are common nails, 16 are finishing nails.

As noted, sheet-cut nails are cut from a sheet of metal. This produces a characteristic shank shape: typically, sheet-cut nail shanks are narrow on two opposing sides and wider on the other two. Due to the uniform thickness of the sheet from which the nails are cut, they taper to a point only on two sides.

Event	Sheet-Cut	Wrought	Drawn	Undetermined	TOTAL
Railway					
B&B Construction					
Pre-Railway/ Post-1826 Flood		2			2
1826 Flood					
Fur Trade					
TOTAL		2			2

Table 14: Distribution of Clasp Nails by Manufacturing Technique

6.11.2.1 Sheet-Cut Common Nails

One hundred seventy-seven of the 319 sheet-cut common nails recovered have flat square heads (Table 15). By comparison, only nine have circular heads. No rosehead sheet-cut nails were excavated, and 128 incomplete nails consist of a shank only. A single reinforced common nail (21K58B6-4085) was recovered from a Railway level in Feature B. The roughly square head of this nail has a raised circular platform upon it. Its shank is rectangular. The remaining four sheet-cut common nails are so corroded that head type cannot be identified.

Event	Flat Square	Flat Circular	Reinforced	Rosehead	Headless	Unidentified	TOTAL
Railway	39	2	1		15	2	59
B&B Construction	2				5	1	8
Pre-Railway/ Post-1826 Flood	90	6			72		168
1826 Flood	4				2	1	7
Fur Trade	42	1			34		77
TOTAL	177	9	1		128	4	319

Table 15: Distribution of Sheet-Cut Common Nails by Head Type

Sixty-seven sheet-cut common nails were recovered from combined Railway and B&B Construction levels. A further 168 come from Pre-Railway/Post-1826 Flood levels, while 77 were excavated from Fur Trade levels. By comparison, only seven were recovered from the 1826 Flood zone.

Fifty-five of the sheet-cut common nails recovered from all levels were complete. With few exceptions, these nails are fairly uniform in size. Although sheet-cut common nails from all levels vary from 39 mm to 80 mm in length, the majority fall within the 39 mm to 43 mm range.

6.11.2.2 Sheet-Cut Finishing Nails

A total of 16 sheet-cut finishing nails were found during FPAP excavations in 1990. Of these, seven come from Railway levels, six from Pre-Railway/Post-1826 Flood levels, one from an 1826 Flood deposit, and two from Fur Trade levels (Table 16). No finishing nails were recovered from levels assigned to the construction of the B&B Building.

Six of these finishing nails are complete. Five range in length from 29 mm to 52 mm, while a single large L-head nail found in Railway level 21K58D3 is 63 mm in length.

Of the 16 sheet-cut finishing nails excavated, 10 are of the L-head variety (Figure 59). The remaining six have flat square heads. No circular-head, T-head or headless sheet-cut finishing nails were recovered.

Event	Flat Square	Flat Circular	L-Head	T-Head	Headless	Unidentified	TOTAL
Railway	4		3				7
B&B Construction							
Pre-Railway/ Post-1826 Flood	2		4				6
1826 Flood			1				1
Fur Trade			2				2
TOTAL	6		10				16

Table 16: Distribution of Sheet-Cut Finishing Nails by Head Type

6.11.3 Drawn Nails

Drawn nails differ from sheet-cut and hand-wrought nails in the form of the shank. In contrast with the square to rectangular shank of sheet-cut and wrought nails, the shanks of drawn nails are most often round. Although less common, triangular and square shank forms are also found.

6.11.3.1 Drawn Common Nails

Five of the nine drawn nails recovered from the 1990 FPAP excavations are common (Table 17). Three of these are headless and two have heads so badly rusted they cannot be identified. Headless nail 21K56T4-4259 has a triangular shank.

Event	Flat Square	Flat Circular	Rosehead	Headless	Unidentified	TOTAL
Railway						
B&B Construction						
Pre-Railway/ Post-1826 Flood				1		1
1826 Flood						
Fur Trade				2	2	4
TOTAL				3	2	5

Table 17: Distribution of Drawn Common Nails by Head Type

One of the drawn common nails excavated came from a Pre-Railway/Post-1826 Flood level, while four were found in Fur Trade levels. The fact that drawn nails post-date the Fur Trade Period is further evidence of the disturbance that has occurred over some areas of the site.

6.11.3.2 Drawn Finishing Nails

Of the four drawn finishing nails recovered, three were found in Pre-Railway/Post-1826 Flood levels 21K54R2, 21K64C2 and 21K58G3 respectively (Table 18). The first (21K54R2-7185) is complete, has a circular head and is 40 mm in length. The second, 21K64C2-7297, is headless. Both have triangular shanks.

The third drawn finishing nail, 21K58G3-6954, is complete, has a round shank and a circular head. This nail measures 33 mm in length. Drawn finishing nail 21K57B8-6975 has a round shank and is headless.

Event	Flat Square	Flat Circular	L-Head	T-Head	Headless	Unidentified	TOTAL
Railway							
B&B Construction							
Pre-Railway/ Post-1826 Flood		2			1		3
1826 Flood							
Fur Trade					1		1
TOTAL		2			2		4

Table 18: Distribution of Drawn Finishing Nails by Head Type

6.12 Smoking Pipes

A total of 13 smoking pipe fragments was excavated in 1990. Twelve were made of white ball clay (commonly known as *kaolin*) and one was made of stone (Table 19).

Event	Unmarked bowl	Unmarked stem	Marked bowl	Marked stem	TOTAL
Railway				1	1
B&B Construction					
Pre-Railway/ Post-1826 Flood	1	1	1		3
1826 Flood	3	1			4
Fur Trade	2	2		1	5
TOTAL	6	4	1	2	13

Table 19: Distribution of Smoking Pipes by Event

Of the twelve ceramic fragments, six were bowl pieces and six were stem fragments. One of these, 21K64E2-5932, is the terminal section of stem that was held in the smoker's mouth. Although one bowl fragment and two pieces of stem bear patterns and maker's marks, the remaining nine fragments have no diagnostic marks.

The single diagnostic clay bowl fragment (21K66E2-5930) was recovered from level 21K66E2, part of the Pre-Railway/Post-1826 Flood zone (Table 19). This fragment bears a ribbed design in molded relief (Figure 60). A leaf motif runs along the single mold seam present. According to Walker (1983:7), this design was "probably exclusively... associated in North America with Hudson's Bay Company trade." It was manufactured by the Fords, a London firm that made clay pipes for three generations. This family business is registered in London trade directories from 1823 to 1909, although family documents indicate it was first registered in 1810 (Walker 1983:7). Archival records indicate this firm was the only supplier of clay pipes to the Hudson's Bay Company from 1831 until at least 1870. Trade records indicate the Fords were also exporting pipes during the periods 1856 to 1877 and 1880 to 1909, although where the pipes were being sent is not clear. An identical design has been found on Ascension Island, indicating the extent of the distribution of Ford products.

The second identifiable pipe fragment (21K57B8-4499), found in Feature B, is a large stem fragment with the word "BANNERMAN" stamped on one side and "MONTREAL" on the other. The stem bore has been drilled far off centre at the extreme outer edge of the stem. Two mold seams extend the length of the fragment.

By the second half of the 19th century, Canadian firms had begun to produce clay pipes. For for a short time, Montreal supported a substantial pipe manufacturing industry, and stem fragments with "MONTREAL" stamped on one side and a variety of maker's names on the other have been found on archaeological sites from New Brunswick to Alberta, as well as in several American states (Walker 1983:22). The Bannermans were Montreal's second largest manufacturers of clay pipes. According to Smith (1986:57), the period during which the company manufactured pipes bearing the brand "BANNERMAN...MONTREAL" on the stem lasted from 1870 to 1903. This firm also established an American branch in New York to avoid paying import duties on the American market. The clay used by both the Montreal and New York operations was imported from Devon, England (Walker 1983:25).

A second stem fragment (21K58B9-4552) is impressed with the number "1" and two letters, "DA...". These marks appear just before the break on one side of the stem. On the other side, part of a single indistinguishable letter is visible next to the break. Two distinct mold seams run down the stem. Unlike the BANNERMAN stem fragment, the bore in this piece is centrally located.

Glasgow pipes far outnumber pipes manufactured in other localities on North American archaeological sites (Walker 1983:12). However, in the Red River area, Ford pipes are the most common while Dixon's, Henderson and Bannerman of Montreal are also frequently found (D. McLeod 1991:pers. comm.).

Despite the relatively large numbers of Glasgow pipes found, they seem to have been exported by only a handful of companies. The sans serif lettering on 21K58B9-4552 is identical to that used by the Glasgow-based pipe making firm of Thomas Davidson Jr. during the 19th century (Walker 1983:Plate II). In 1861, Davidson's succeeded the firm of William Murray, established in 1830. Davidson's continued to produce pipes from 1861 until 1910. Typical examples of Davidson pipes bear the impressed name "DAVIDSON" on one side of the stem and "GLASGOW" on the other.

Glasgow pipemakers impressed mold numbers on the stems of their pipes, usually before or after the maker's name. By 1900, Davidson's had reached mould number 388 (Walker 1983:18). Although Thomas Davidson Jr. took over William Murray's company in 1861, historical records suggest that any change was in name only and Davidson's continued to use the original mold numbers established by Murray's (Walker 1983:38). The appearance of the number "1" on stem fragment 21K58B9-4552, however, makes this seem unlikely. We would expect mold number "1" to date to about 1830 when William Murray first began pipe production. Since Thomas Davidson Jr.'s name did not begin appearing on clay pipes until he bought Murray's company in 1861, the appearance of his name in conjunction with the mold number "1" suggests that Davidson began a new series of mold numbers in 1861. Alternately, the mold number was retained but with a modification to the spur portion of the mold, which was altered to read "TD". According to the 1900 Scottish pipe price list, Davidson's mold number "1" produced a TD pipe, the most popular variety manufactured during the 19th century (Walker 1983:38).

Figure 60: Selected Smoking Pipes

A single Canadian example has been recorded of a pipe with "DAVIDSON & HAY" impressed upon one side of the stem and "TORONTO" on the other. Interestingly, this pipe was not manufactured in Toronto by a firm of this name, but was produced by an unknown pipemaker advertising the wholesale grocery and lumber company of Davidson & Hay (Walker 1983:27). Although only one example of such a pipe has been recorded, the possibility remains that 21K58B9-4552 is not a DAVIDSON of Glasgow pipe, as it is impossible to determine whether the single incomplete letter on one side of the stem is a "W" representing the word "GLASGOW", or an "O" representing "TORONTO." No illustration of the Davidson & Hay imprint was available to permit comparison of types of lettering.

Pipe fragment 21K58B9-4552 was recovered from level 21K58B9, designated Fur Trade, although its known production dates post-date the Fur Trade Period. Based upon this evidence and the fact that it lies immediately adjacent to Railway Feature B, level 21K58B9 should be considered disturbed by this feature.

The single stone pipe fragment recovered, 21K64E5-4550, is a complete bowl from a platform pipe. This type of stone pipe is commonly known as *Micmac*, and consists of a tulip-shaped or cylindrical bowl joined to a tabular platform or base by a constricted neck. A bored wooden stem was inserted into a hole drilled into the platform. This specimen is broken at the neck. It came from Fur Trade level 21K64E5. This level consisted entirely of a very thick ash deposit. The bowl has been burned, either prior to or after deposition. Although Micmac pipes are generally made of steatite or serpentine, 21K64E5-4550 is heavily encrusted with ash, making determination of stone type impossible. However, a similar Micmac bowl recovered from Rock Island, Wisconsin (Mason 1986:Plate 14.5) is made of limestone.

6.13 Fauna

Artifacts included in this CPS category are the archaeologically-recovered remains of animal life such as bone, teeth and shellfish fragments.

6.13.1 Taxonomic Identifications

A total of 7,482 pieces of fauna was recovered during the 1990 Forks Public Archaeology Project. Of these, 1,078 fragments could not be identified to a gross Class level and are listed as *undifferentiated* fauna. The remaining 6,404 pieces were identified to various taxonomic levels (Appendix B). Primary references used in faunal identification were Olsen (1960, 1964), Gilbert (1973), DeBlase and Martin (1974), Mundell (1975), Clarke (1981), Scott and Crossman (1973). Specimens were identified to the lowest taxonomic ranking wherever possible, although incompleteness of the element often resulted in identification at the Family, Order or Class level.

When assigning remains to a size category, the following conventions were observed: *large mammal* includes cow, bison, deer, moose, elk, bear, pig, sheep and goat; *medium mammal* includes beaver, muskrat, dog, wolf, coyote, fox, rabbit, hare, porcupine, skunk and cat; *small mammal* includes squirrel, chipmunk, mouse and shrew. *Artiodactyla*, or cloven-hoofed mammals, were divided into *large*, *small* and *undifferentiated* categories, in order to illustrate the distinction between the larger cow, bison, moose and elk elements, and the smaller bones of sheep, goats and pigs.

Bird remains were also divided into size groups. *Large* birds include swan, goose, hawk, eagle, loon and heron. *Medium* birds range from kingfisher to duck, and *small* birds are the size of a sparrow or warbler.

6.13.1.1 Mammal

Identified mammal remains totalled 2,794. Of these, 2,515 fragments could be separated only into gross size categories such as small, medium, large, small/medium and medium/large. The remaining 279 pieces of mammalian fauna were identified to a variety of taxonomic levels. A further 145 specimens were unidentified (Table 20).

The remains of several domesticated species, such as sheep/goat, horse and pig were recovered from all levels. A number of fragments, identifiable only to the Family (Bovidae) level, may be of a domestic cow.

A number of pieces of mammal bone show signs of modification and are discussed in Sections 6.13.2 and 6.13.3.

IDENTIFICATION	QUANTITY
Large Mammal	123
Medium/Large Mammal	2270
Medium Mammal	42
Small/Medium Mammal	32
Small Mammal	48
Bison	2
Moose	1
Elk	4
Large Artiodactyla	4
Undifferentiated Artiodactyla	2
Horse	10
Sheep/Goat	13
Sheep	1
Undifferentiated Carnivore	3
Wolf/Dog/Coyote/Fox	6
Pig	11
Rabbit/Hare	4
Beaver	33
Muskrat	10
Squirrel	2
Undifferentiated Small Rodent	27
Undifferentiated Rodent	1
Undifferentiated Mammal	145
TOTAL MAMMAL	**2794**

Table 20: Identified Mammalian Fauna, All Levels

6.13.1.2 Bird

Three hundred sixty-six (366) faunal fragments were identified as Class *Aves*, or bird. Of these, 204 pieces were eggshell, and 103 of the remaining bone fragments could not be identified beyond the Class level. The remaining 59 pieces were identified by either gross size, Family, Genus or Species (Table 21).

IDENTIFICATION	QUANTITY
Large Bird	20
Medium/Large Bird	5
Medium Bird	11
Small Bird	2
Goose	2
Bald Eagle	2
Trumpeter Swan	5
Undifferentiated Duck	8
Small Duck	4
Eggshell	204
Undifferentiated Bird	103
TOTAL AVIAN FAUNA	**366**

Table 21: Identified Avian Fauna, All Levels

6.13.1.3 Fish

The majority of the fauna recovered in 1990 was fish (Figure 61). Of the 2,527 pieces recovered (Table 22), 2,278 pieces were unidentifiable as to species. One hundred nineteen pieces (119) belonged to the catfish (*Ictalurus* sp.). Due to the osteological similarity between many elements of the channel catfish (*Ictalurus punctatus*) and bullhead (*Ictalurus nebulosus*), all catfish bone was designated catfish/bullhead. Similarly, walleye, sauger, mooneye and goldeye were combined into the two classes walleye/sauger (*Stiziostedion* sp.) and mooneye/goldeye (*Hiodon* sp.). Eighty fragments were sturgeon (*Acipenser fulvescens*). The remaining 50 pieces consisted of pike (*Esox lucius*), walleye/sauger, mooneye/goldeye, sucker (Catostomidae) and freshwater drum (*Aplodinotus grunniens*).

IDENTIFICATION	QUANTITY
Pike	2
Sturgeon	80
Catfish/Bullhead	119
Walleye/Sauger	11
Mooneye/Goldeye	5
Sucker	21
Freshwater Drum	11
Undifferentiated Fish	2278
TOTAL FISH	**2527**

Table 22: Identified Fish, All Levels

6.13.1.4 Shellfish

Six hundred eighty-two (682) fragments of freshwater and marine shellfish were recovered during the 1990 FPAP season. Four hundred forty-three (443) of these fragments were identified as the fingernail/pea clam *(Sphaeriidae)* (Table 23). The remainder were identified as snail (*Gastropoda*), freshwater clam (*Unionidae*) (Figure 62:bottom centre), pink heel-splitter (*Propteraalata*), and fat mucket (*Lampsilis radiata*).

IDENTIFICATION	QUANTITY
Pink Heel-Splitter	15
Snail	66
Freshwater Clam	152
Fingernail/Pea Clam	443
Fat Mucket	4
Money Cowrie	2
TOTAL SHELLFISH	**682**

Table 23: Identified Shellfish, All Levels

Figure 61: Representative Fish Specimens

Figure 62: Representative Shellfish

Too small to be of value as a human food resource, fingernail/pea clams (Figure 62:top left) and snails are considered to be naturally-deposited. The remains of these shellfish were abundant throughout the site.

Two cowrie shells (21K54D6-4551) (Figure 62:top centre) found in Fur Trade context are identical to a single specimen recovered in 1989. These small shells, measuring 14 mm and 17 mm in length, have been identified as the Pacific money cowrie, *Monetaria moneta* (B. McKillop 1991:pers. comm.). This small yellow cowrie is indigenous to the Indian Ocean, the East Indies and the islands of the tropical Pacific. They are not, as was formerly reported (Kroker, Greco *et al* 1990:105), indigenous to the Gulf of Mexico region. There is, however, a similar sub-species, *Cypraia spurca acicularis*, commonly known as the Atlantic yellow cowrie, which is indigenous to the Gulf region.

Although formerly utilized as an item of currency in the South Pacific, they are known to have been of ornamental value almost worldwide (Abbott 1982:7). They are not a common find on North American archaeological sites, although they have been identified at the Francois-Finlay site in Saskatchewan, where they are almost certainly related to a Fur Trade component (D. Meyer 1991:pers. comm.).

6.13.1.5 Reptile and Amphibian

A single snake vertebra (21K57C1-4343) was found in B&B Construction level 21K57C1 (Table 25). Thirty-six pieces of fauna were identified as *Anura*, and are probably frog/toad. These small bones tend to be found clustered in sand pockets, and may be the remains of frogs or toads which died during winter hibernation (Kroker 1989:145). All are considered to be naturally-deposited.

6.13.2 Butchering Marks and Other Trauma

Several fragments of both mammal and bird bone display definite butchering marks in the form of linear cuts, sawn surfaces and spiral fractures. Circular puncture holes and chew marks on several pieces are indicative of carnivore activity (Figure 63:top). The right end of this bird humerus has a circular puncture created by the canine tooth of a carnivore. Pitted surfaces on some of the recovered bone are probably the result of etching by acidic soils.

6.13.2.1 Spiral Fractures

Although spiral breaks can be produced naturally by large animals walking over freshly deposited, unweathered bones, they may also be produced deliberately by a powerful blow to the bone shaft, followed by a twisting motion in which force is applied in opposite directions, exposing the marrow (Kitching 1963; Sadek-Kooros 1972).

Figure 63: Representative Bird Bone

The practice of breaking open longbones to extract the nutrient-rich marrow within is historically well documented, and is a custom shared by both humans and animals.

Bone fragments 21K64C8-5623 and 21K54Q4-5584 clearly display spiral fractures. The former, an incomplete juvenile elk femur (Figure 64:bottom), has been fractured midway down the shaft. The latter, a distal horse humerus, has distinct impact scars along the break. These scars were produced by the object used initially to break the bone.

6.13.2.2 Butchering Marks

Two fragments of bison bone, 21K54R6-5836 and 21K65D4-5289, were recovered from 1826 Flood and Fur Trade levels respectively. The latter, a distal tibia fragment, exhibits two faint cut marks on the anterior surface. The jagged, broken edges of this fragment indicate it was also chewed by a carnivorous animal. A very large second phalanx (21K56J8-4320), identified as moose (*Alces alces*) and recovered from Fur Trade context, exhibits cut marks near the proximal end.

Fragments 21K64D3-4659, 21K54R2-5470, 21K58D3-5956 and 21K58D3-4635 have all been sawn (Figure 65). Fragment 21K54R2-5470, a large mammal rib, has numerous deep cut marks upon it (Figure 66). Shallow linear striae also present are not cut marks, but have been left by rodents gnawing the bone to extract the nutrients.

Figure 64: Selected Mammal Bones

Figure 65: Sawn Mammal Bones

Figure 66: Cut Marks and Acid Etching on Mammal Bones

6.13.2.3 Acid Etching

Five teeth and a single distal humerus fragment, 21K54C4-4024, have been identified as *Canis*, or dog/wolf/coyote/fox. The surface of the humerus (Figure 66) has been etched by acid.

Acidic soils or plant roots can etch bone after deposition, or stomach fluids can etch fragments as they pass through the mammalian digestive tract. The acids produced by plant roots leave distinctive fan-shaped trails on bone. The absence of these trails, the lack of chewing marks and the large size of 21K54C4-4024 (which would have made it difficult to ingest), suggest it has been etched by the surrounding soil rather than by stomach acid. The gracile form of this humerus fragment, as well as the fact that it is from a mature individual, suggest it is from a domestic dog (*Canis familiaris*) or coyote (*Canis latrans*) rather than a wolf (*Canis lupus*).

6.13.3 Worked Bone

Two pieces of worked bone (21K55R7-5591, 21K66E4-5701) were recovered from Fur Trade and 1826 Flood levels respectively (Figure 67). The former is a small, square piece of cut bone measuring 10 mm square. It is worn smooth, is highly polished and may be a gaming piece.

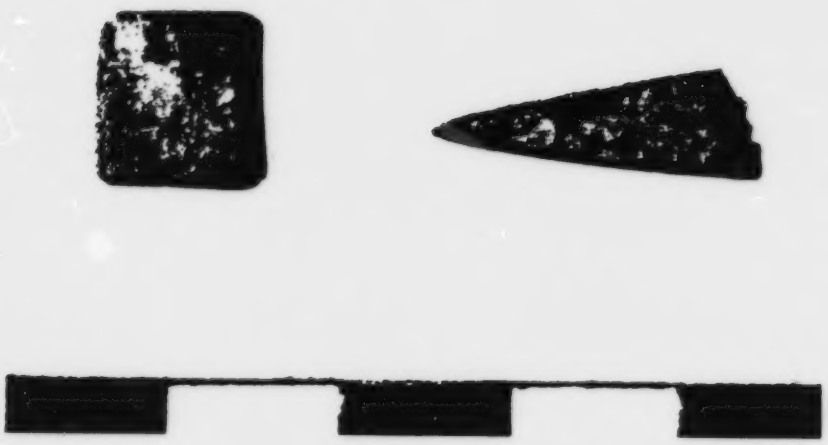


Figure 67: Worked Bone

Artifact 21K66E4-5701 (Figure 67) is a possible netting needle. This broken bone fragment measures 19 mm in length. Like the gaming piece, it is flat and highly polished. It has been shaped to a point.

6.13.4 Faunal Recoveries by Event

In order to examine variations in subsistence strategies and changes in diet, faunal remains were analyzed by event.

6.13.4.1 Railway Period

A total of 424 pieces of fauna were recovered from Railway levels. Fifty-one were mammal, twenty-one were bird, three hundred twenty-nine (329) were fish, nine were shellfish, and fourteen fragments could not be identified (Table 24).

6.13.4.2 B&B Construction Period

Of the 27 pieces of fauna found in B&B Construction levels, seven were identified as mammal, four as fish, one as reptile (snake) and fifteen as amphibian. Twenty-seven pieces could not be identified (Table 25).

IDENTIFICATION	QUANTITY	
UNDETERMINED CLASS		**14**
MAMMAL		**51**
Undifferentiated Mammal	9	
Large Mammal	10	
Medium/Large Mammal	25	
Small Mammal	2	
Pig	4	
Muskrat	1	
BIRD		**21**
Undifferentiated Bird	1	
Small Bird	1	
Eggshell	19	
FISH		**329**
Undifferentiated Fish	314	
Catfish/Bullhead	13	
Freshwater Drum	1	
Walleye/Sauger	1	
SHELLFISH		**9**
Fingernail/Pea Clam	3	
Snail	6	
TOTAL FAUNAL REMAINS		**424**

Table 24: Identified Faunal Remains, Railway Period

Figure 68 compares faunal recoveries from Railway and B&B Construction levels. At first glance, the two graphs are extremely dissimilar, with mammal remains accounting for only 12.0% of the fauna found in Railway levels compared to 26.0 % of the B&B Construction fauna. Similarly, amphibian remains make up 66.8% of the B&B Construction faunal assemblage, while no amphibian remains were found in Railway levels. However, it must be noted that the construction of the B&B Building is a smaller, discrete event within the larger Railway Period. When faunal assemblages from the two events are combined (Figure 69), the resulting distribution more closely resembles faunal distributions compiled for each of the other major events identified at The Forks (Figures 70 and 71).

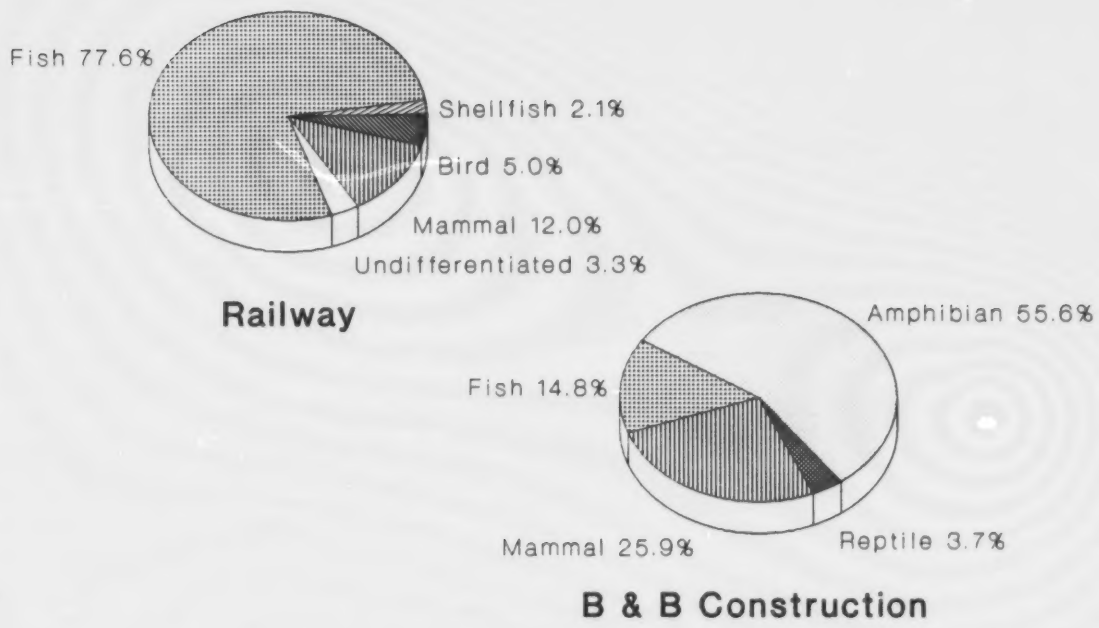


Figure 68: Faunal Recoveries, Railway and B&B Construction Periods

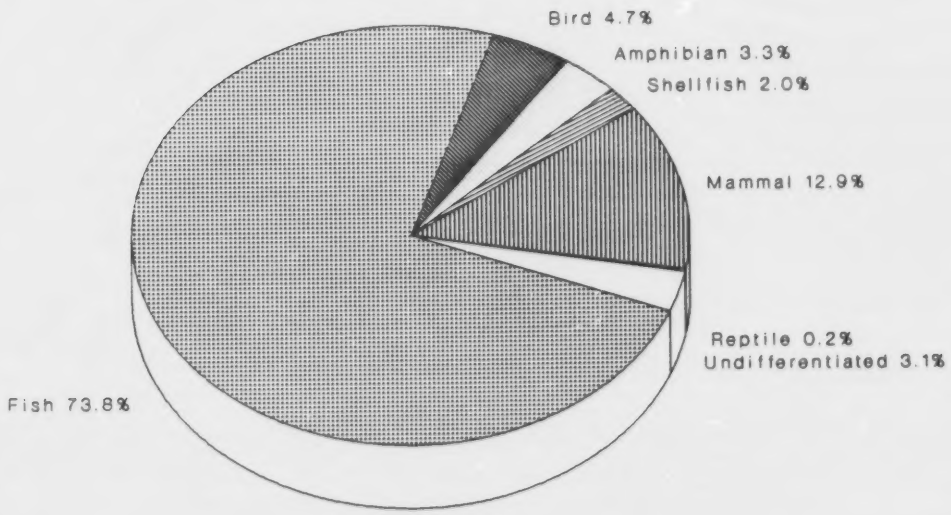


Figure 69: Combined Faunal Frequencies, Railway and B&B Construction Periods

IDENTIFICATION	QUANTITY	
MAMMAL		**7**
Large Mammal	1	
Medium/Large Mammal	2	
Medium Mammal	1	
Sheep/Goat	1	
Small Rodent	1	
Squirrel	1	
FISH		**4**
Undifferentiated Fish	3	
Sturgeon	1	
REPTILE		**1**
Snake	1	
AMPHIBIAN		**15**
Frog/Toad	15	
TOTAL FAUNAL REMAINS		**27**

Table 25: Identified Faunal Remains, B&B Construction Period

6.13.4.3 Pre-Railway/Post-1826 Flood

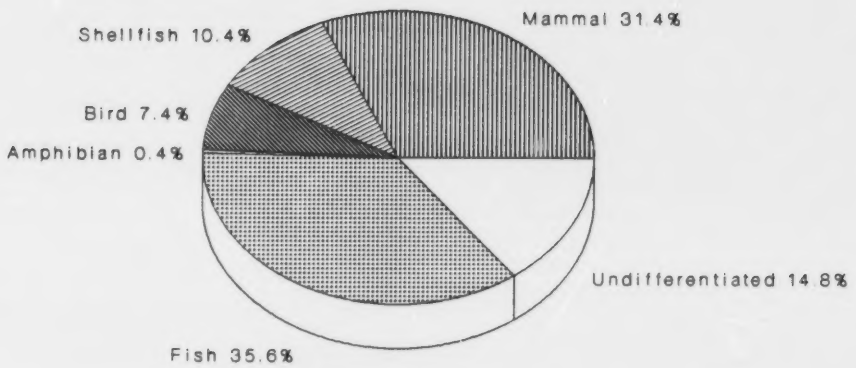
A total of 567 pieces of fauna was recovered from Pre-Railway/Post-1826 Flood levels. Of these, 178 were mammal, 42 were bird, 202 were fish, 2 were amphibian, 59 were shellfish and 84 could not be identified (Table 26).

6.13.4.4 1826 Flood

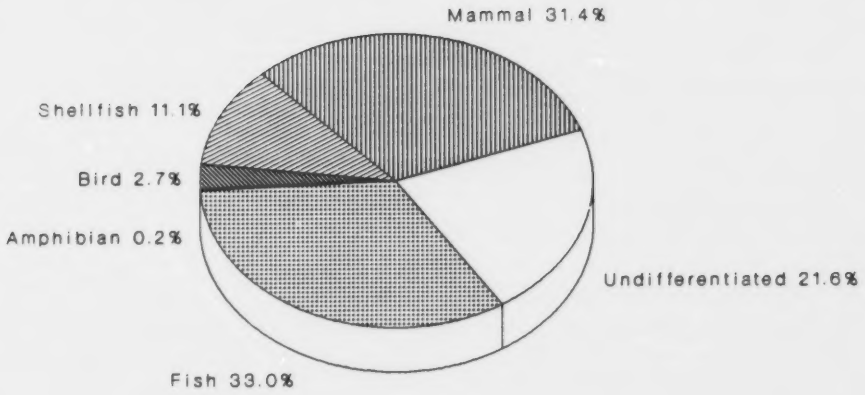
A total of 2,403 pieces of fauna was recovered from 1826 Flood levels. The majority (794) were fish, while 754 were mammal, 66 were bird, 4 were amphibian, 267 were shellfish and 518 could not be identified (Table 27). Figure 70 compares frequencies of faunal remains recovered from Pre-Railway/Post-1826 Flood and 1826 Flood levels.

IDENTIFICATION	QUANTITY	
UNDETERMINED CLASS		**84**
MAMMAL		**178**
Undifferentiated Mammal	23	
Large Mammal	24	
Medium/Large Mammal	87	
Small Mammal	21	
Large Artiodactyla	1	
Horse	3	
Pig	2	
Sheep/Goat	6	
Carnivore	1	
Small Rodent	8	
Beaver	2	
BIRD		**42**
Undifferentiated Bird	40	
Medium Bird	1	
Undifferentiated Duck	1	
FISH		**202**
Undifferentiated Fish	192	
Catfish/Bullhead	6	
Mooneye/Goldeye	1	
Sturgeon	2	
Sucker	1	
AMPHIBIAN		**2**
Frog/Toad	2	
SHELLFISH		**59**
Fingernail/Pea Clam	53	
Freshwater Clam	6	
TOTAL FAUNAL REMAINS		**567**

Table 26: Identified Faunal Remains, Pre-Railway/Post-1826 Flood Period



Pre-Railway/Post 1826 Flood



1826 Flood

Figure 70: Faunal Recoveries, Pre-Railway/Post-1826 Flood and 1826 Flood Periods

IDENTIFICATION	QUANTITY	
UNDETERMINED CLASS		**518**
MAMMAL		**754**
Undifferentiated Mammal	34	
Large Mammal	15	
Medium/Large Mammal	650	
Medium Mammal	19	
Small/Medium Mammal	2	
Small Mammal	9	
Undifferentiated Artiodactyla	1	
Large Artiodactyla	1	
Bison	1	
Horse	1	
Pig	2	
Sheep/Goat	1	
Undifferentiated Carnivore	1	
Wolf/Dog/Coyote/Fox	2	
Rabbit/Hare	1	
Undifferentiated Rodent	1	
Small Rodent	2	
Beaver	7	
Muskrat	4	
BIRD		**66**
Undifferentiated Bird	15	
Large Bird	2	
Medium/Large Bird	1	
Medium Bird	4	
Bald Eagle	1	
Goose	1	
Undifferentiated Duck	2	
Small Duck	1	
Eggshell	39	
FISH		**794**
Undifferentiated Fish	705	
Catfish/Bullhead	40	
Freshwater Drum	6	
Mooneye/Goldeye	3	
Sturgeon	31	
Sucker	7	
Walleye/Sauger	2	
AMPHIBIAN		**4**
Frog/Toad	4	
SHELLFISH		**267**
Fingernail/Pea Clam	259	
Snail	2	
Freshwater Clam	6	
TOTAL FAUNAL REMAINS		**2403**

Table 27: Identified Faunal Remains, 1826 Flood Period

6.13.4.5 Fur Trade Period

The majority of the fauna excavated in 1990 came from Fur Trade levels. A total of 4,061 fragments included 1,804 pieces of mammal bone, 237 bird, 1,198 fish, 15 amphibian, 345 shellfish and 462 unidentified fragments (Table 28). Figure 71 shows the relative percentages of the different faunal remains recovered from this event.

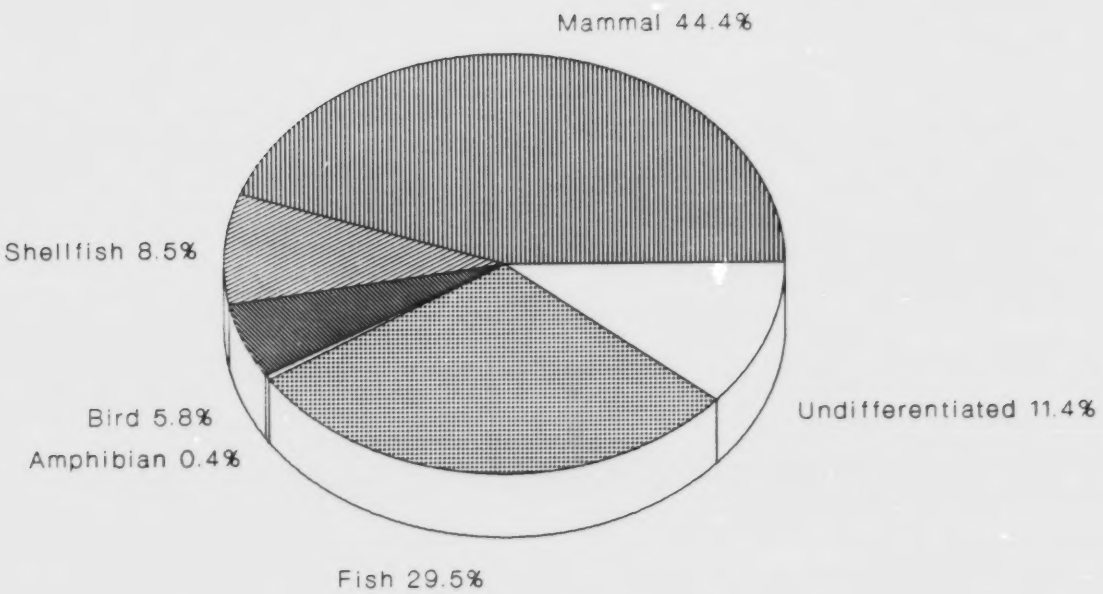


Figure 71: Faunal Recoveries, Fur Trade Period

IDENTIFICATION	QUANTITY	
UNDETERMINED CLASS		**462**
MAMMAL		**1804**
Undifferentiated Mammal	79	
Large Mammal	73	
Medium/Large Mammal	1506	
Medium Mamma	22	
Small/Medium Mammal	30	
Small Mammal	16	
Undifferentiated Artiodactyla	1	
Large Artiodactyla	2	
Bison	1	
Moose	1	
Elk	4	
Horse	6	
Pig	3	
Sheep/Goat	6	
Undifferentiated Carnivore	1	
Wolf/Dog/Coyote/Fox	4	
Rabbit/Hare	3	
Small Rodent	16	
Beaver	24	
Muskrat	5	
Squirrel	1	
BIRD		**237**
Undifferentiated Bird	47	
Large Bird	18	
Medium/Large Bird	4	
Medium Bird	6	
Small Bird	1	
Bald Eagle	1	
Trumpeter Swan	5	
Goose	1	
Undifferentiated Duck	5	
Small Duck	3	
Eggshell	146	
FISH		**1198**
Undifferentiated Fish	1064	
Catfish/Bullhead	60	
Freshwater Drum	4	
Mooneye/Goldeye	1	
Pike	2	
Sturgeon	46	
Sucker	13	
Walleye/Sauger	8	
AMPHIBIAN		**15**
Frog/Toad	15	
SHELLFISH		**345**
Fingernail/Pea Clam	128	
Snail	58	
Freshwater Clam	140	
Pink Heel-Splitter	15	
Fat Mucket	4	
TOTAL FAUNAL REMAINS		**4061**

Table 28: Identified Faunal Remains, Fur Trade Period

6.13.5 Discussion of Faunal Recoveries

In examining Figures 68 through 71, several trends become apparent. The proportion of mammal recoveries increases steadily with depth, from 12.9% of the combined Railway/B&B Construction faunal assemblage to 44.6% of the Fur Trade assemblage. The total amount of fauna recovered also increases with depth, from only 451 pieces in Railway/B&B Construction levels to 4,061 fragments in Fur Trade levels (Figure 72). This may reflect a trend through time of decreasing reliance upon hunting as a subsistence activity or simply the elimination of habitation on site.

Shellfish frequencies are roughly constant throughout Fur Trade, 1826 Flood and Pre-Railway/Post-1826 Flood levels, but decline substantially in Railway/B&B Construction levels. Most of these shells were deposited naturally; when ground levels were raised at The Forks at the beginning of the Railway Period, the extent of yearly flooding probably declined. Therefore, fewer fingernail clams and snails would have washed into the area and been preserved in the archaeological record.

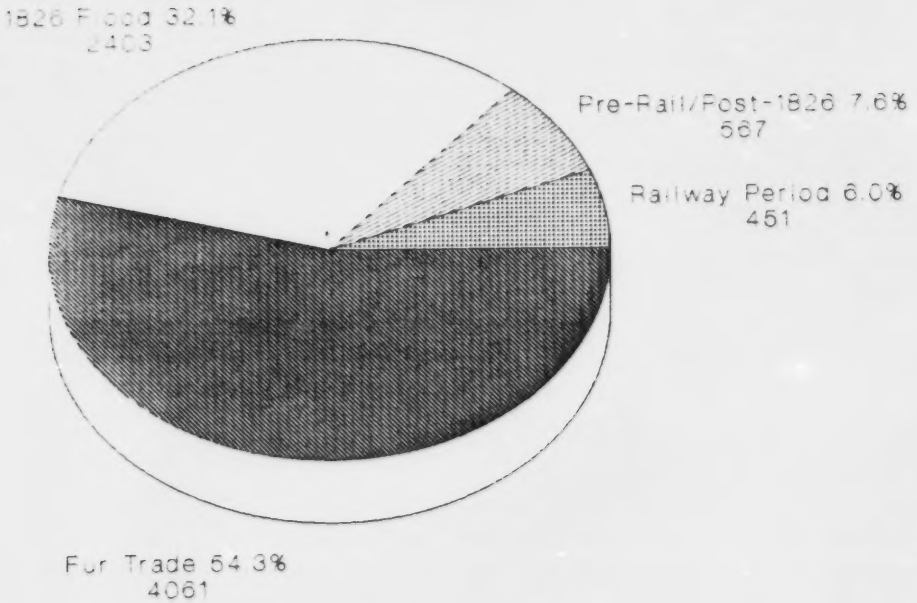


Figure 72: Frequency of Total Fauna by Event

The percentage of avian (bird) recoveries remains fairly constant over time, although it declines slightly in 1826 Flood levels. The slight rise in the number of undifferentiated (unidentifiable) faunal fragments in 1826 Flood levels suggests the recoveries from this event were smaller and more fragmented than those found in other levels. As smaller bone fragments are more easily washed around by flooding, we would expect to find greater numbers of very small bone fragments in these levels.

To portray the available food resources through time, the quantities for each event, shown in Figure 73, have been adjusted to eliminate specimens such as fingernail clams, snails and small rodents, which are obviously the result of natural deposition. Some additional specimens are probably the result of secondary deposition by scavengers or by riverine action.

6.13.5.1 Railway Period

During the Railway Period (including the B&B Construction event), fish remains predominated (Figure 69). These bones—mainly skull fragments—probably derive from fish processing activities of individual local anglers during the early portion of the Period. The mammal and bird bones may be refuse from food services provided by the railroads, and incorporated into the cinder fill. The large and medium/large mammal bones probably represent domesticated species other than the identified pig remains.

6.13.5.2 Pre-Railway/Post-1826 Flood

During the sixty-two years encompassed by the Pre-Railway/Post-1826 Flood Period, three major historic events took place at this location. The Experimental Farm stables were situated here (1836–1848), as were the Immigration Sheds (1872–1885) and the attendant Shanty Town on the west bank of the Red River. As the latter two events were residential in nature, large quantities of food-derived faunal remains would be expected. However, examination of Figure 73 shows that the recoveries from soil layers assigned to this time period are not large. Therefore, it can be assumed that garbage dumps or refuse disposal areas relating to these events have not been encountered.

Faunal remains resulting from animal husbandry during the tenure of the Experimental Farm would be the result of butchering and disposal of carcasses of diseased animals. Even though the activities would have been related to food production, it is probable that minimal food consumption occurred at the location. The HBC employees, whose duties included farm labour (Coutts 1988:131–132), would have lived in the surviving buildings of Fort Garry I (the former Fort Gibraltar II) or at Upper Fort Garry.

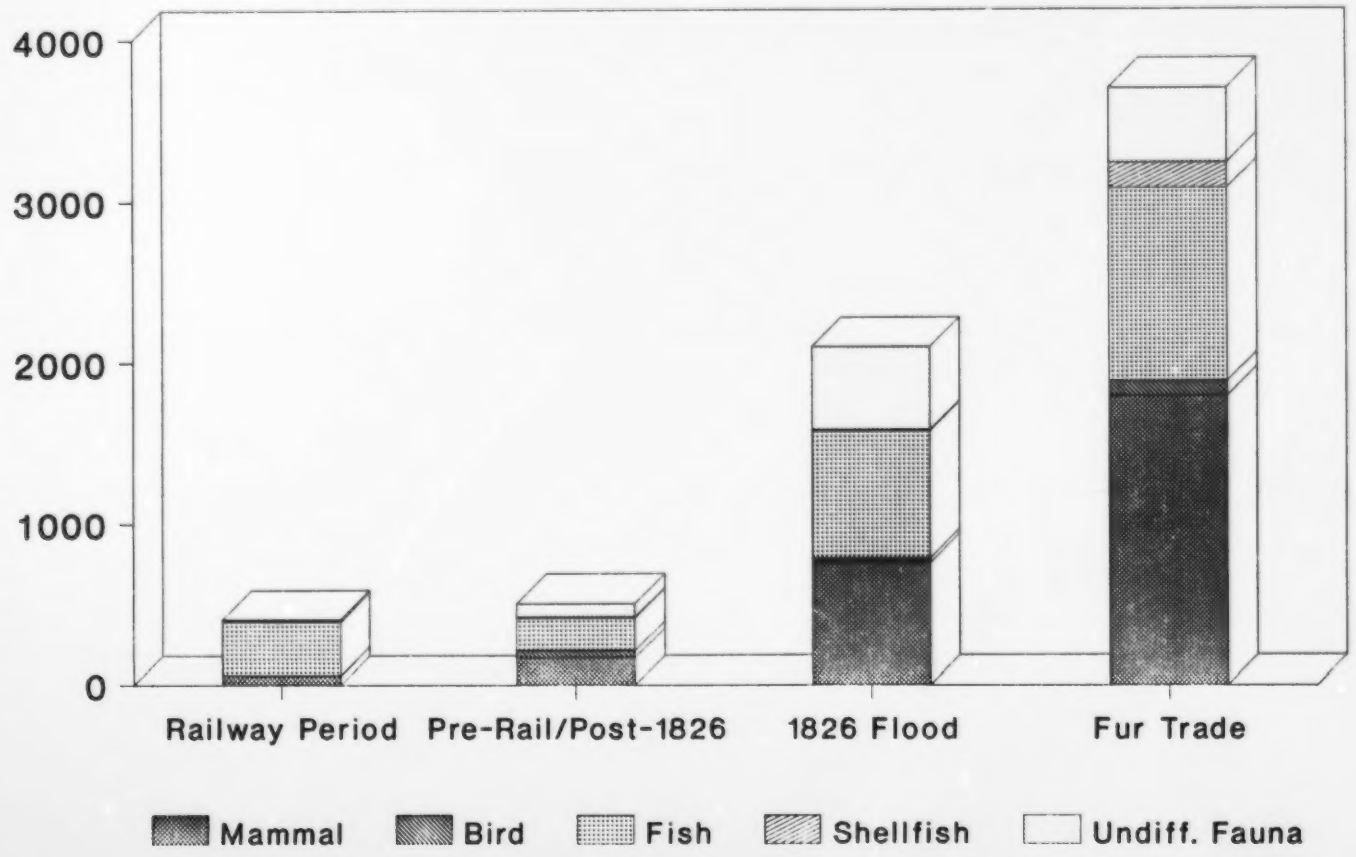


Figure 73: Representation of Edible Faunal Resources

Domestic species make up a significant amount of the animal remains recovered (Table 26). Many of the large and medium/large fragments may represent elements from cow as well as the other identified species. The fish remains probably are the result of on-site preparation of fish which were consumed elsewhere.

6.13.5.3 1826 Flood and Fur Trade Periods

The faunal remains from the layers associated with the 1826 Flood were likely incorporated into floodwater sediments. These specimens probably derive from:

1. refuse deposits relating to the residential occupation of Fort Gibraltar I,
2. surface scatter of faunal remains resulting from temporary campsites at the location after the destruction of Fort Gibraltar I,
3. water-transported specimens which originated from refuse deposits relating to the residential occupation at Fort Gibraltar II (Fort Garry I) immediately to the south, or
4. water-transported specimens which had been carried from other locations up the Red or Assiniboine rivers.

The size of the element can suggest which of the above actions is most probable for each specimen. Larger fragments of bone probably represent case 1 or case 2, while smaller specimens could be the result of case 3 or case 4. Comparison of Figures 70 and 71 show that there is a strong similarity in the faunal assemblages between each event. The 1826 Flood Period frequency of mammal bone is less than that of the Fur Trade Period, while the percentage of fish bone is greater. This would be the expected result of flood waters circulating over and through refuse deposits. The frequencies of each taxonomic class (Figure 70) are similar to those represented in the Fur Trade Period (Figure 71). This suggests that most of the bone originated in refuse deposited during the occupation of Fort Gibraltar I.

The faunal assemblage which represents residential activities during the period of operation of Fort Gibraltar I contains more variety than the assemblages from other time periods. A large percentage of the faunal remains represent wild game, although domestic animals are represented by pig, sheep/goat and horse. In 1814, Fidler built a barn, stable, sheep house and hog sty at Fort Douglas (Coutts 1988:83), indicating domestic animals were present at The Forks by that date. Smith (1985:13) notes horses were occasionally used as food, but only as a result of dire necessity, due to their importance as transportation.

The reliance on wild species for meat is evident. Both large and small species contributed to the diet (Table 28). Small game, such as beaver, rabbit, muskrat and squirrel were probably procured locally, while the larger animals, such as elk, moose and bison would have been obtained by hunting parties sent out from Fort Gibraltar or by trade with Native groups and Metis. During this period, shellfish from the adjacent rivers were used—probably as a food source and as a raw material for the manufacture of buttons and other items.

The shift in reliance on different species over time may be more apparent than real, inasmuch as the derivation of the faunal remains has changed. The materials from the earlier periods would have been primary deposits, with some relocation by the 1826 Flood. Material from the later periods would result from secondary deposition of food consumed elsewhere or from the primary processing of locally caught fish which were cleaned and decapitated. The major difference is the continued lessening reliance on wild species in favour of domestic animals.

6.14 Miscellaneous Organic

Five thousand four hundred fifty-one (5451) items were catalogued as *Miscellaneous Organic*. This class includes organic artifacts which do not fall into Arms and *Ammunition, Beads, Containers, Fasteners, Smoking Pipes* or *Fauna*. For example, a shell bead and a wooden smoking pipe may be made from organic materials, but are more correctly classified under *Beads* and *Smoking Pipes* respectively. Fragments of wood and newspaper, however, are classified as *Miscellaneous Organic*.

This category comprised 77 fragments of woven cloth, 4 pieces of leather, a cloth portion of a composite eyelet, 3 string fragments, 12 paper fragments, 28 seeds and 5,310 pieces of burnt wood (Figure 74). Although inventoried as *Analytical Samples* instead of *Miscellaneous Organic* artifacts, a further seven large samples of burnt timber were collected from various features. These were used to determine the species of wood being utilized during the Fur Trade Period.

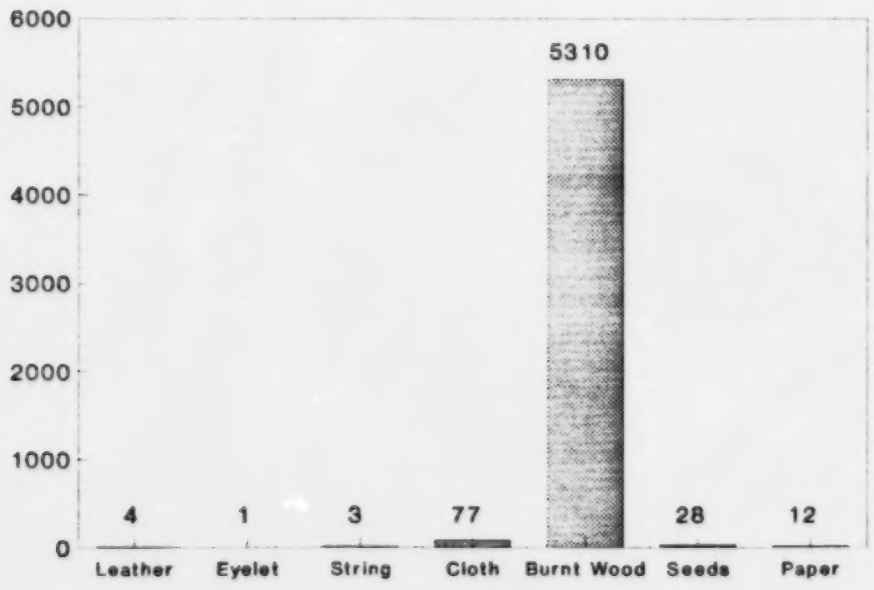


Figure 74: Miscellaneous Organic Artifacts

Most of the fabric was found in Feature B. Although the majority of the fragments appear to be made of a heavy cotton or wool, a number of pieces are felt. Two pieces of woven fabric (21K58C4-4542, 21K58C5-4544) exhibit a very faint pattern which could not be identified due to the soiled nature of the cloth. These fragments have been sent to Canadian Parks Service for conservation in the hope that the pattern will be identifiable after cleaning. A very large woven wool fragment (21K57C7-4541) may be a blanket remnant.

Of the four leather fragments recovered, three are pieces of leather strapping. Two of these (21K57B8-6797, 21K58C1-6621) are stitched along the edge and may be harness leather. The remaining leather artifact (21K57C7-4534) is a complete boot or shoe sole recovered from Feature B. This artifact was situated directly above the woven blanket fragment described earlier. The two artifacts were removed together and both were sent to Canadian Parks Service for conservation.

The function of the 3 pieces of string has not been determined, nor could any print be discerned on the 12 fragments of paper excavated. The cloth eyelet (21K57B7-6655) is an incomplete specimen of the composite tin/cloth artifact described in Section 6.10.1.

6.14.1 Charcoal and Seed Analysis

Charcoal and seed analysis was performed by D. M. Deck. Due to the large amount of charcoal submitted for identification, five of the seven *Analytic Samples* were sub-sampled by randomly choosing fragments from each. The sixth sample (21K55G9-6829) consisted of two 2–3 cm wide strips of bark which could not be identified as to species. Sample 21K55K9-6828 consisted of two intact pole-like segments of wood. A single piece was removed from each section for analysis. A Wild Heerbrugg binocular microscope was used to analyze the charcoal and seeds at magnifications between 12X and 100X. Reference collections were consulted in order to verify all identifications. Taxonomy is based on Looman and Best (1979).

6.14.1.1 Charcoal

Varying concentrations of burnt wood occurred throughout the excavation area. The heaviest deposits appeared in Feature I, a cellar depression covering an area of approximately 3 m^2, and in adjacent Feature Q, an area of *in situ* wooden flooring (Section 5.3). Since the majority of the wood encountered was massive, exhibited a consistently north-south orientation and was found in association with large amounts of chinking, all wood excavated from these features is assumed to be of structural origin. A detailed illustration of these timber features is provided in Figures 20 and 27.

Level	Inventory Number	Quantity Sampled	Charcoal Sample Description	*Populus*	*Fraxinus*	*Tilia*	Bark
21K55G9	6829	2	narrow 2–3 cm strips wide				X
21K55J7	6824	5	charcoal fragments		X		
21K55J7	6825	4	plank (8 cm wide) fragment			X	
		1	charcoal fragments		X		
21K55K9	6828	2	pole-like fragments	X			
21K56J12	6826	1	plank (8 cm wide) fragment	X			
		6	charcoal fragments	X			
21K56K11	6823	5	charcoal fragments	X			
		2	charcoal fragments			X	
21K56K13	6827	5	charcoal fragments		X		

Table 29: Identified Charcoal Recoveries

A total of 33 fragments was identified (Table 29). All represent hardwood species. These include *Populus* sp. (poplar), *Fraxinus* sp. (ash) and *Tilia* sp. (basswood). Both poplar and ash occur in three of the seven samples. The two pole-like sections in sample 21K55K9-6828, one 2.5 cm and the other 3.0 cm in diameter, were identified as poplar. The two plank-like samples were identified as basswood (21K55J7-6825) and poplar (21K56J12-6826).

Today along the Red River, the floodplain and river-bottom forests contain Manitoba maple (*Acer negundo*), black and green ash (*Fraxinus nigra, F. pennsylvanica*), American elm (*Ulmus americana*), cottonwood (*Populus deltoides*), basswood, peach-leaved and sandbar willows (*Salix amygdaloides, S. interior*) (Morgan 1989; Shay *et al.* 1990). Bur oak (*Quercus macrocarpa*), trembling aspen (*Populus tremuloides*) and balsam poplar (*P. balsamfera*) are found on the upper edges of these forests (Morgan 1989).

The charcoal excavated from Features I and Q represents species that currently grow in the area as well as basswood. The Forks lie within the range for basswood (Hosie 1969:288). Thus it would appear that the majority of the wood used as structural material for the building of Fort Gibraltar I was selected from locally available hardwoods. In addition, Robertson and Roi noted that the palisade was made of oak (Coutts 1988:79, 81). However, by the 1840s riverbank timber stands had been largely depleted and firewood and structural timbers had to be obtained from the mixed and boreal forests to the northeast (Coutts 1988:132).

6.14.1.2 Seeds

Twenty-seven samples were submitted for seed identification (Table 30). Uncharred specimens included *Prunus pensylvanica* (pin cherry), *Convolvulus sepium* (wild morning-glory or hedge bindweed), *Vicia* sp. (vetch), cf. Gramineae (grass family) and three unidentified fragments. The only charred remains were *Corylus* (hazel nut) shell fragments, recovered from two samples.

Most of the specimens derive from Fur Trade Period contexts. Only 21K51D5-4267 (grass seed fragment) and 21K58B6-4091 (two hazel nut fragments) were obtained from upper strata. The hazel nut fragments were located in a Pre-Railway/Post-1826 Flood layer adjacent to, and possibly disturbed by, Feature B. The fragmented grass seed (21K51D5-4267) originated in the lower layer of the strata assigned to the 1826 Flood Period. There is a possibility that some of the whole grass seeds were wind-borne and intrusive, since one (21K53D8-6776) had begun to germinate. However, buried seeds can retain their viability for considerable periods of time.

Wild morning-glory, hazel nut and pin cherry occur within the Red River gallery forests. The latter two may have been exploited as a food resource. *Convolvulus sepium* is known as a persistant plant surviving in areas after cultivation (Looman and Best 1979:502) and may have grown within the compound of the fort, particularly in shaded areas adjacent to the buildings. The vetch specimens represent a forage crop cultigen grown for domesticated animal fodder (Kroker, Greco *et al.* 1990:104) or a native species (*Vicia americana*) which prefers shaded habitats (Scoggan 1957:374).

6.15 Miscellaneous Inorganic

Excluding chinking, 109 artifacts were classified as *Miscellaneous Inorganic*. This category consists of inorganic objects which do not "fit" into any of the other CPS artifact classes. It includes 92 fragments of mortar, two pieces of battery core, five plastic comb teeth, two buttons, four fossils, a clay ball, 168.4 kg of chinking, one large piece of coal and an incomplete lead pencil (Table 31).

Ninety-two fragments of mortar were recovered throughout the site. Although the majority were found within Fur Trade levels, small amounts were found in 1826 Flood and Pre-Railway/Post-1826 Flood levels (Table 31).

Two broken pieces of compressed carbon were excavated from levels 21K57D7 and 21K58B9, and appear to be battery core fragments. Although both levels are classified as Fur Trade, they lie adjacent to Railway Feature B and have probably been disturbed by it. One of these fragments, 21K57D7-7079, has been modified into a possible writing tool. The end has been ground into a rough point and is worn. Although the same size, shape and composition, these two fragments do not fit together. Each is 11.5 mm in diameter.

Level	Inventory Number	Charred	Uncharred	*Corylus* sp.	*Prunus pensylvanica*	*Convolvulus sepium*	*Vicia* sp.	Gramineae	Unidentified
21K51D5	4267		X					1F	
21K51F7	6613		X		1F*				
21K51F8	4307		X		1F				
21K52H95	6736		X			3W			
21K53D8	6776		X					1W**	
21K53G5	4311		X					1W	
21K54C4	4010		X						3F***
21K54H4	3918		X					1W	
21K54T4	6789		X		6W4F				
21K55G6	3915		X					1F	
21K55K13	6646		X		1F				
21K55R7	6714		X			2W			
21K55R7	6715		X			3F			
21K56B6	6756		X			1F			
21K56E7	6815		X			1W			
21K56H6	4338		X		1F				
21K56H6	6725		X		2F				
21K56H7	6688	X		1F					
21K56K9	3938		X					2F	
21K56U5	6616		X		1W				
21K57H6	6733		X			1W			
21K57J5	6730		X			1W			
21K58A10	6711		X				2W		
21K58B6	4091	X		2F					
21K58B7	6792		X		2F				
21K65B5	6767		X		1W2F				
21K65D5	6724		X			1W			
21K65D5	6724		X		1W				
TOTAL				3F	9W14F	9W4F	2W	3W4F	3F

* F = Fragment; W = Whole
** This seed had begun to germinate
*** Too small for identification

Table 30: Identified Seed Remains

Event	Level	Mortar	Lead Pencil	Battery Core	Comb Tooth	Rubber	Fossil	Clay Ball	TOTAL
Railway	21K58C4							1	1
	21K58C5						1		1
	21K58D3						1		1
B&B Construction	21K54S1		1						1
	21K64D1	1							1
Pre-Railway/ Post-1826 Flood	21K56T3	1							1
	21K64B2	10							10
	21K64E2						1		1
1826 Flood	21K64D4	3							3
	21K66C5						1		1
	21K51B4	6							6
Fur Trade	21K51C4	6							6
	21K51F8	12							12
	21K53C4	2							2
	21K53H12	2							2
	21K54B3	2							2
	21K55C5	1							1
	21K55G7	8							8
	21K55S7	1							1
	21K57B7				1				1
	21K57C7				2				2
	21K57D7			1					1
	21K58A9					1			1
	21K58B9			1	2				3
	21K64E4	37							37
TOTAL		92	1	2	5	1	4	1	106

Table 31: Distribution of Miscellaneous Inorganic Artifacts (Excluding Buttons) by Level

Five black plastic comb teeth were found in levels 21K57B7, 21K57C7 and 21K58B9. These levels are designated Fur Trade, but evidence indicates they have been disturbed by Feature B. A single small fragment of black rubber (21K58A7-7114) was removed from a Fur Trade level. Again, this is indicative of disturbance by Feature B.

Two buttons, recovered from levels 21K58B6 and 21K58D3, have been discussed in Section 6.4.

Four fossil fragments were found in levels 21K58C5, 21K58D3, 21K64E2 and 21K66C5. One is a fossil sponge (21K58C5-4281) and one a Rugose coral (21K58D3-7126). Rugose corals first appeared in the Ordovician Period, approximately 500 million years ago.

The remaining two fossils (21K64E2-6300, 21K66C5-6450) are *Crinoid* stem fragments. Crinoids are primitive, ocean-dwelling organisms which have existed for 500 million years. After death, their segmented bodies break up and often become fossilized, and Palaeozoic limestone deposits containing large numbers of these organisms are common. Crinoid remains may be transported great distances by fluvial or glacial action and their presence in soil deposits at The Forks is not unusual (G. Lammers 1991:pers. comm.). The round stem fragments excavated in 1990 resemble small brown beads.

A single round clay ball (21K58C4-4501), 15 mm in diameter, was recovered from Feature B. It is made of unglazed, porous grey clay. Although its function is uncertain, three identical specimens excavated from the Hudson's Bay Company outpost at York Factory have been identified as clay marbles (Lunn 1985:58).

Since weight was deemed the most appropriate measure of the total quantity of chinking excavated in 1990, individual fragments of chinking were weighed rather than counted. A total of 168.4 kg of chinking was recovered. Due to storage limitations and given the uniformity in colour and composition of the chinking excavated, only a sample from each level was curated. The distribution of chinking by unit is illustrated in Figure 75 while a breakdown of the amount by level is detailed in Table 32.

The overwhelming majority of chinking was found in Fur Trade levels; negligible quantities were recovered from non-Fur Trade levels. Most of the chinking recovered was orange, the result of having been burnt. Larger concentrations were often as much as 40 cm in thickness.

A single, large square fragment of coal was recovered from level 21K58B3 in Feature B but was not curated. In addition, an incomplete pencil (21K54S1-6720) was excavated from a level designated as B&B Construction. Although broken, much of the wood covering the graphite core remains.

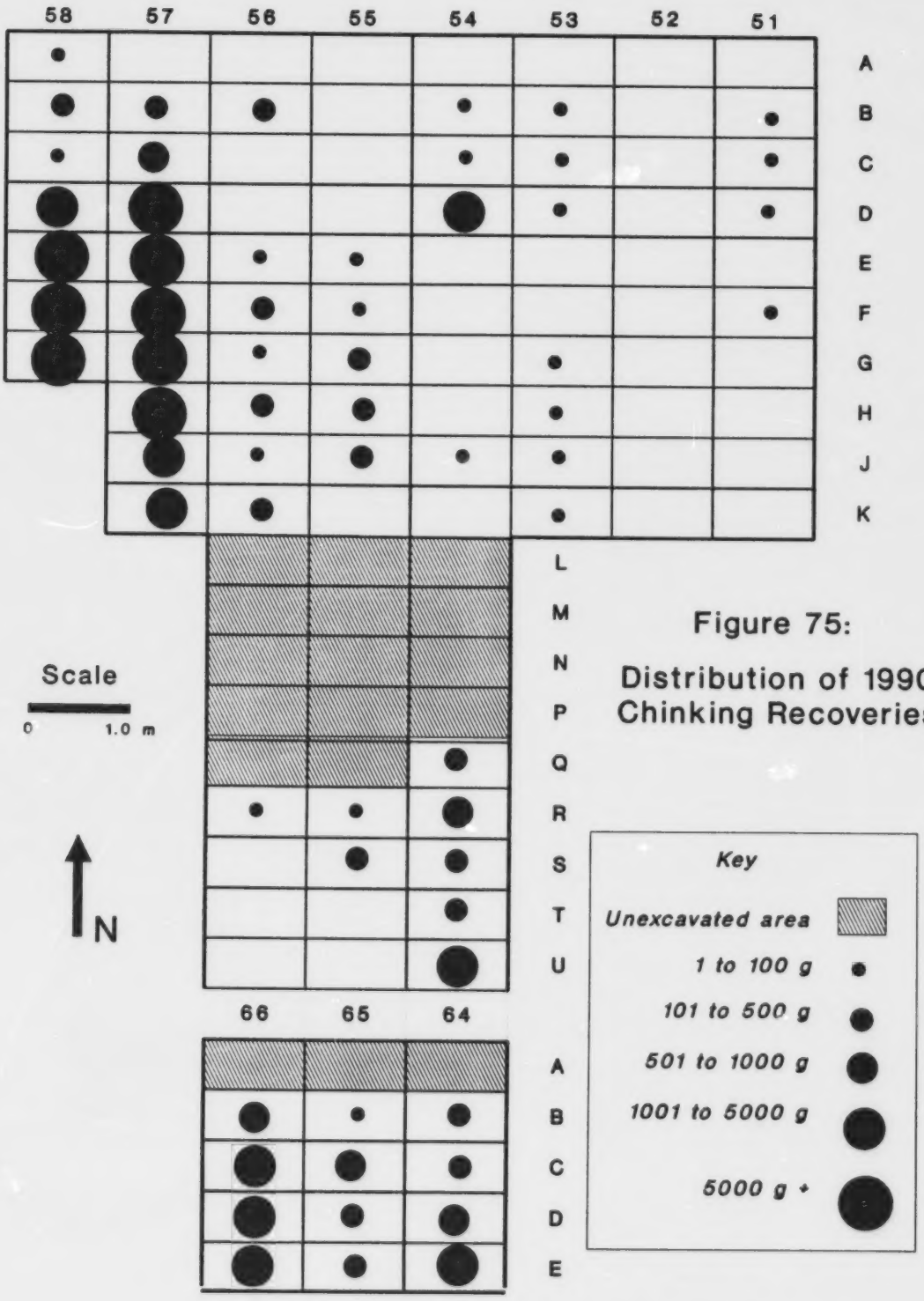


Figure 75:

Distribution of 1990 Chinking Recoveries

Level	Weight
21K51B4	1.3 g
21K51C4	2.3 g
21K51D6	2.0 g
21K51F8	3.1 g
21K53B6	1.1 g
21K53B7	1.4 g
21K53C4	8.7 g
21K53C5	1.1 g
21K53D6	10.1 g
21K53G3	2.1 g
21K53G5	2.2 g
21K53H7	4.0 g
21K53H12	11.2 g
21K53J7	3.0 g
21K53K96	1.1 g
21K54B4	8.7 g
21K54C4	18.2 g
21K54D4	92.4 g
21K54D5	2208.3 g
21K54D7	26.2 g
21K54J7	5.0 g
21K54Q9	73.8 g
21K54Q10	195.8 g
21K54Q11	17.6 g
21K54R5	4.9 g
21K54R6	48.9 g

Level	Weight
21K54R9	797.4 g
21K54R10	28.2 g
21K54R11	37.0 g
21K54R12	18.1 g
21K54S6	1.0 g
21K54S9	464.2 g
21K54S10	13.8 g
21K54S11	9.6 g
21K54T9	258.1 g
21K54T10	45.3 g
21K54T11	24.6 g
21K54U6	10.6 g
21K54U7	21.6 g
21K54U10	59.7 g
21K54U11	932.1 g
21K54U13	15.3 g
21K55E3	14.7 g
21K55F7	38.4 g
21K55G6	221.4 g
21K55G8	51.5 g
21K55H6	54.5 g
21K55H7	100.5 g
21K55J6	124.4 g
21K55J12	15.0 g
21K55R6	7.5 g
21K55R10	24.0 g

Level	Weight
21K55S7	25.6 g
21K55S9	231.3 g
21K55S10	79.2 g
21K56B6	200.5 g
21K56E7	15.3 g
21K56F7	13.5 g
21K56F8	59.8 g
21K56F9	49.7 g
21K56G10	21.4 g
21K56G13	5.9 g
21K56H10	114.3 g
21K56J10	55.0 g
21K56K8	9.0 g
21K56K9	17.5 g
21K56K10	38.7 g
21K56K13	131.3 g
21K56K14	26.0 g
21K56R3	53.9 g
21K56R6	8.4 g
21K57B7	160.5 g
21K57C6	5.4 g
21K57C7	503.0 g
21K57D4	433.9 g
21K57D7	35.6 g
21K57D8	5124.6 g
21K57D9	46.0 g

Table 32: Weight of Chinking by Level

Level	Weight
21K57E5	26.7 g
21K57E6	449.1 g
21K57E8	28,921.7 g
21K57F5	42.2 g
21K57F6	16.2 g
21K57F7	519.2 g
21K57F8	21,997.3 g
21K57F9	14.0 g
21K57G1	10.1 g
21K57G6	80.7 g
21K57G7	478.0 g
21K57G8	5179.0 g
21K57G9	11,178.1 g
21K57G10	60.0 g
21K57H2	3.0 g
21K57H6	52.0 g
21K57H7	60.0 g
21K57H8	927.2 g
21K57H9	18,532.8 g
21K57H10	19.0 g
21K57J4	22.0 g
21K57J5	98.0 g
21K57J6	28.0 g
21K57J7	551.0 g
21K57J8	2974.6 g
21K66C2	103.6 g
21K66C4	48.7 g
21K66C5	3136.2 g

Level	Weight
21K57J9	4.0 g
21K57K5	12.0 g
21K57K6	14.0 g
21K57K7	382.4 g
21K57K8	635.5 g
21K58A9	34.2 g
21K58A10	6.0 g
21K58B7	78.8 g
21K58B8	14.7 g
21K58B9	22.4 g
21K58C5	7.7 g
21K58C6	30.2 g
21K58D1	6.3 g
21K58D3	1369.3 g
21K58D4	781.4 g
21K58E1	14,303.4 g
21K58F10	673.3 g
21K58F11	7155.8 g
21K58F12	3005.0 g
21K58F13	293.1 g
21K58G6	225.3 g
21K58G8	3020.0 g
21K58G10	462.9 g
21K58G11	2000.0 g
21K58G12	15,000.0 g
21K66D4	27.8 g
21K66D5	216.7 g
21K66D6	1663.3 g

Level	Weight
21K58G13	1500.0 g
21K64B6	303.7 g
21K64C6	84.2 g
21K64C7	41.0 g
21K64C8	224.5 g
21K64D5	102.9 g
21K64D6	677.0 g
21K64E4	9.5 g
21K64E5	1682.7 g
21K65B4	40.0 g
21K65B5	41.3 g
21K65C5	57.0 g
21K65C6	304.9 g
21K65C7	204.5 g
21K65D4	128.9 g
21K65D5	277.6 g
21K65E3	27.5 g
21K65E4	70.9 g
21K65E5	185.7 g
21K65E6	21.3 g
21K65E7	120.0 g
21K66B2	14.6 g
21K66B3	30.6 g
21K66B4	14.8 g
21K66B5	668.8 g
21K66E2	47.6 g
21K66E4	171.1 g
21K66E6	1250.4 g

TOTAL	168.404 kg

7.0 INTERPRETATION: 1990 FORT GIBRALTAR I EXCAVATION

7.1 Railway Period (1888–1988)

The major developments of the Railway Period at The Forks are well documented in the historical record of the City of Winnipeg. Archaeological interpretation of this period will rely on these documents, with the archaeological record being used, in some instances, to confirm location of specific developments or to add an archaeological perspective to what is known from the historical record.

The Fort Gibraltar I excavation was located on the west bank of the Red River, near the junction of the Red and Assiniboine rivers. The land (formerly called *the flats*) was low and, in the past, flooded periodically. Prior to being used for rail yard development, the surface had to be built up and levelled.

In 1888, Charles Brydges, then Hudson's Bay Company Land Commissioner, and the individual responsible for the sale of the area to the newly-formed Northern Pacific and Manitoba Railroad Company, stated that the railway company intended to raise the ground level "about four feet" (Guinn 1980a:140). This was to be accomplished by grading and levelling, and then by dumping gravel in the area. The archaeological excavations conducted at the site in 1984, 1988 and 1989 produced no evidence of this grading, levelling or gravel dumping.

The fill and overburden level excavated at the site in 1989 and 1990 overlays the natural soil surface of the area and relates to the later Railway Period. About 1.75 m of post-1889 railway deposits are found in the excavation area. Most of this material is composed of by-products from coal-fired steam generation. The materials may have come from steam locomotives or from the stationary steam plant built post-1918, some 200 m to the west of the excavation. The cinder and ash matrix contains the bulk of the debris produced by railway activity. Discarded ties, rails, wood, wire, broken bottles, earthenware jugs and window glass were found throughout the overburden level.

Considering the volume of material that covers the area, the time taken to build up the vast amount of railway fill over the area was considerable. It likely lasted until locomotives were replaced by oil-burning Diesel engines. Since this thick level of debris has formed a protective cover over the earlier surface, recent activities in the area have not disturbed the buried soils and cultural features at the site.

A Railway Period activity for which archaeological evidence exists was the construction, during the fall of 1888 and into 1889, of a "ten stall roundhouse, a repair car shop, and a blacksmiths' shop, all solid brick and connected with each other under the same roof" (Guinn 1980b:4). This building, minus the roundhouse, still

the B&B Building, so named because of its function as the Bridges and Buildings Department depot during the era of railway activity associated with Canadian National Railways.

Evidence of refuse from the blacksmiths' shop was found on the surface of the natural soils in the central area and western end of the 1989 excavation. This consisted of a mass of rust, metal scraps, bolts, nails, wire, machine fragments and barrel hoops (Feature A). This area was also likely used as a general dumping area since bottles, window glass and other discarded materials were recovered from this feature in 1989.

As this feature was found on the natural soil surface of the area and since no evidence of gravel dumping or grading could be found, the railway fill and debris in the excavation area are post-1889. No evidence of any major sub-surface disturbance was found during the 1989 or 1990 investigations.

7.2 B&B Construction (1888–1889)

While encompassed within the Railway Period, the construction of the car repair shop and adjoining roundhouse has produced sufficiently distinct evidence to be considered as a discrete event. Most of the evidence for the event is found in the soil record. Five separate construction-related strata were observed in the western portion of the excavation and in the site extension area. A retired bricklayer who visited the site in 1989 noted that the patterning of the Australian Camouflage layers could have been the result of mortar preparation during cold weather. Different sands and different mixtures would have been used as the temperature varied.

Feature B represents the primary evidence of activity during this period. Located in the northwest corner of the site, it is a refuse pit approximately 1.5 m in diameter. It was first encountered within the Australian Camouflage layers and extended through Pre-Railway/Post-1826 Flood and 1826 Flood levels into Fur Trade layers. The upper part of the feature contained 149 bricks. Once the bricks were removed, the underlying soil matrix consisted of a greyish-brown clay mixed with rubble fill. The feature outline became increasingly difficult to delineate as excavation of the fill progressed.

A variety of artifacts were recovered from the feature. These are the Bannerman clay pipestem, Davidson clay pipestem, barrel hoop, padlock, door latch bar, door plate, bridge token, harness D-ring, lamp air deflector, lamp collar and the partially reconstructed medicine bottle. Also included are bottle finishes, square nails, screws, fence staples, fish bones, fish scales and mammal bones.

Other artifacts, such as the boot sole and associated woven wool, the glass doorknob, two glass buttons, two metal buttons and sheet-cut nails are from Fur Trade levels 21K58B9, 21K58C7 and 21K57D7 which were disturbed by the feature.

Few datable artifacts were found within the feature. The two temporally diagnostic specimens were the Fulton brick, manufactured between 1887 and 1913 and the Bannerman pipestem produced between 1870 and 1913. These dates, coupled with the stratigraphic location of the feature, suggest it was formed during the construction of the B&B Building between the fall of 1888 and the summer of 1889. It is not known whether the pit was dug for the purpose of filling it with refuse or whether the pit was already extant.

Many recovered artifacts, including a large quantity of machine-made metallic specimens, are railway related. The admixture of these, and other artifacts such as the Blackwoods bottle base, and the ivoryware ceramic sherd are a result of activity during the construction period, as well as slight surface disturbance at a later period.

Artifacts that are contemporaneous with the construction activity include bottle fragments, windowpane sherds, nails (both sheet-cut and hand-wrought) and many of the artifacts in Feature B.

The presence of earlier artifacts, within the lower strata of this period, represent surface disturbance during construction. Material on or immediately below the ground level would have become incorporated in the basal levels of the B&B phase. These include a bead, a lead shot and chinking fragments.

7.3 Post-1826 Flood to Pre-Railway Level

During the 1989 site excavation, three distinct strata were defined between the railway fill stratum and the 1826 Flood level. In 1990 these levels were present in the newly excavated units in the northwest portion of the site and in the extension area. The following layer descriptions, particularly with reference to artifact recoveries, are based on undisturbed strata only. Artifacts recovered from disturbed soils adjacent to Feature B are not included in the layer summaries.

The upper level (Layer 8) is a mottled, dark brown to tan clay found directly below the Railway Period or B&B Construction deposits. Artifacts recovered from this level include a straight pin, shell button, glass button, metal button, two metal eyelets, two 12 gauge cartridge cases, 18 beads, 46 historic ceramic sherds, 129 square nails and a Ford clay pipe bowl fragment manufactured between 1831 and 1909.

Layer 9, a tan to buff coloured silty clay, contained only 14 nails and five beads. Features C and S, two post holes, were located within this layer. Both are approximately 25 cm square and extend down to the Fur Trade Period. They could relate to a structure or fence.

Layer 10 is a brown, mottled, silty clay with organic stains. Manure was found within this layer in units 21K54T, 21K55S, 21K55T, 21K56T and 21K56U. Artifacts recovered from this layer include a bottle finish, a transfer-printed ceramic sherd, 20 square nails and 30 beads. Twenty-seven of the beads came from level 21K55R5.

Two differing hypotheses—based on the 1989 excavations—have been presented as possible interpretations of the stratigraphic sequence for this time period (Kroker, Greco *et al.* 1990:135–136). Hypothesis A was predicated upon the assumption that most of the three recorded historic floods (1882, 1861, 1852) had left evidence of their occurrences. Hypothesis B assumed that, even with the occurrences of the floods, stratigraphic evidence need not have been present.

The 1990 site excavations provided little additional information with which to prove or disprove either hypothesis. Unfortunately few temporally diagnostic artifacts were recovered from these strata during the 1984, 1989 or 1990 excavations at Fort Gibraltar I. Thus, interpretation of historic events which occurred in the area must depend strongly on the stratigraphic sequences. The presence of manure within Layer 10 helps to confirm the suggestion that this layer relates to the presence of domestic animals at the Experimental Farm stable complex from 1836 to 1848 (Kroker, Greco *et al.* 1990:136). To date, no structural evidence of the farm buildings has been excavated. A soil flotation sample of manure was collected in 1990 and is being processed.

Horse and sheep/goat faunal remains confirm the presence of domestic animals. The low frequency of domestic faunal remains may be due to utilization of these local food resources at places of residence (i.e., Upper Fort Garry, in settlers' homes, etc.) rather than at the Experimental Farm stable complex.

Sedimentological analysis, by Drs. C. T. Shay and L. Stene, of a soil column removed during the 1989 field season is forthcoming and will hopefully provide further data to aid in the interpretation of the stratigraphy.

7.4 1826 Flood

The flood of 1826 was a major calamity for the residents of the Red River valley. The flood began on May 5, and the residents sought refuge on high ground at Silver Heights, Stonewall Ridge and Pine Ridge (now known as Bird's Hill). Hudson's Bay Company clerk Francis Heron recorded: "Forty-seven dwelling houses were thus carried off by the first rush in the short space of half an hour, and many others afterwards from which the wretched inhabitants barely escaped with their lives." (Coutts 1988:122).

As the flood waters did not begin to recede until June, thick layers of silt and clay would have settled out of the relatively stationary waters. Current interpretation is that the sand stratum (Layer 11) would have been deposited during the first phase of the flood, with the subsequent layers of silts and clays being laid down

when the waters slowed or became stationary. Layer 12 is tentatively considered to be a deposit that occurred during the first rise of the waters. Alternatively, it may have originated during minor high water episodes after 1816 and prior to 1826.

The artifacts from the flood horizon are concentrated in the western portion of the excavation, along with the thickest sand deposits (ca. 30 cm). The erosional and transport behaviour of flood waters can explain the presence of artifacts that probably derive from the occupation of Fort Gibraltar I. Lead shot, beads, a shell button, a trade ring and chinking, located in this stratum, would have been relocated by the flood waters swirling through the burned ruins of the fort.

7.5 Fur Trade Period

The 1990 field season involved the excavation, to the base of the Historic Period, of those units opened during the 1989 project. This investigation resulted in the recovery of numerous Fur Trade artifacts and in the identification of nine additional soil layers. As a result of the 1989 and 1990 excavations, 25 soil layers have now been defined below the 1826 Flood zone. These strata consist of silts, silty clays and clays with mixtures of ash, charcoal, chinking, bone and organic stains. Five additional features have been defined within this time period (Figure 76). Most of these features pertain to structural elements attributed to Fort Gibraltar I.

Features that were not completely excavated during the 1989 field season were further examined in 1990. These features included the hearth and ash staining (Features F and G), Feature H (wood, chinking and charcoal), the palisade/trench line (Feature L) and the cellar depression (Feature I). Little evidence of the first four features was obtained. The Feature L trench did not continue and no other post holes were located. This trench is probably a rodent tunnel that coincides with a post hole.

Feature I proved to be the most interesting feature excavated during the 1989 and 1990 Forks Public Archaeology Project. Within this feature were several charred timbers generally oriented north-south. These timbers were sometimes in two layers and orange chinking was present over and between them. This wood (identified as poplar, ash and basswood) and chinking probably collapsed into the depression when Fort Gibraltar I was burned in 1816. A similar cellar depression was excavated in 1984 (Priess *et al.* 1986), and the two are perhaps located within the same structure.

A large number of artifacts were recovered from the feature, especially from its outer sloping edges, and from the sandy clay layer and the dark green clay at the bottom of the depression. These artifacts include 51% (1591) of the trade beads found at the site in 1990, 56% (394) of the lead shot, two gunflints, two square nails and two trade rings. Another trade ring, which probably originated in the feature, was found in the 1826 Flood level above the feature. The abundance of smaller

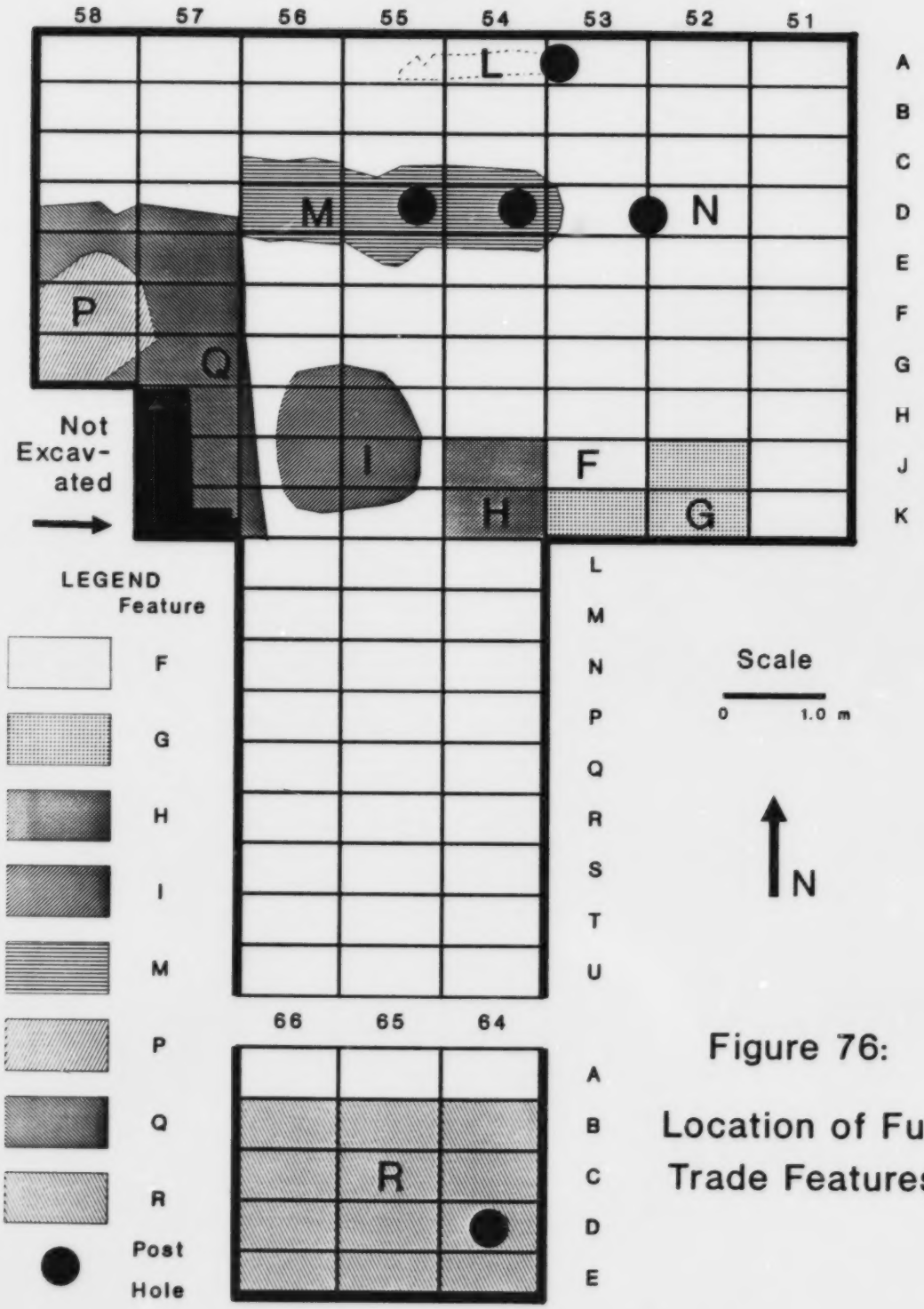


Figure 76:

Location of Fur Trade Features

artifacts such as the beads and the shot is likely due to flood action washing them into the depression. Alternatively, these small artifacts may have fallen through the rough-hewn floor planks of the building above.

Further structural evidence is provided by Feature M. Thin, vertical fragments of burnt wood, running east-west for approximately 3 m, were located about 2 m north of Feature I. Chinking, at times mixed with ash, was present south of this wood. The chinking extended horizontally for approximately 0.5 m. Three post holes in an east-west alignment were found in association with Feature M. An additional post hole was discovered 1 m east of the feature. A few horizontal fragments of burned wood were also recovered in the western half of the feature. Few artifacts were found from this feature: 20 glass trade beads and 7 lead shot. This feature is probably part of the collapsed north wall of the same structure which also contained Feature I.

Features P and Q represent further remains of this structure. Feature P is composed of limestone rocks from a chimney collapse. Some of these rocks were revealed during the 1984 Fort Gibraltar I excavation, but were not removed at that time. A similar rock concentration was encountered in 1984 (Priess *et al.* 1986:139), approximately 1 m east of Feature P. The rocks are probably from the same chimney collapse, which may have occurred post-1816.

A large (11 cm to 30 cm thick) deposit of orange chinking extended to the north, south and east below the rocks. This chinking, representing 84% (140.9 kg) of the total amount recovered during the 1990 field season, formed part of Feature Q. Charred wooden flooring planks oriented north-south were found east of and under the chinking. One of these planks was identified as poplar. In some areas the wood had burnt away, leaving a dark carbon stained clay layer.

Additional charred wooden flooring, oriented in an uncommon east-west, was located in the northern portion of this feature. This wood could be related to the north wall of the structure identified in Feature M just to the east.

Along the eastern edge of Feature Q were two burnt, parallel, wooden poles, approximately 1.7 m long and 5 cm in diameter. These could represent roof supports or stringers.

At the end of the 1990 field season, a deep depression was discovered in 21K58G at the southern end of the feature. Four parallel wood fragments, each approximately 50 cm long and oriented north-south, slope into the depression. A few wood fragments were located at the bottom of the depression. Artifacts recovered from this depression include two trade rings, a tinkling cone and 24 glass trade beads. Two tinkling cones and another 107 beads were found in other areas of the feature.

This feature provides a link with the 1984 project. Excavation of 1984 unit 21K6R ceased once the chinking was encountered. This unit is equivalent to all of unit 21K58E and part of unit 21K58F, which were excavated during the 1990 field season. The eastern portion of 1984 unit 21K6S was revealed when units 21K57H, 21K57J and 21K57K were opened during the 1990 project. Unit 21K6S was largely excavated during the 1984 project (Priess *et al.* 1986:156) and was therefore not investigated during the 1990 field season. The chinking and carbon stained flooring level from unit 21K6S were found to extend north into 1990 units 21K57H, 21K57G and part of 21K57F.

Further excavations to provide additional linkage with the 1984 excavation are necessary in order to reveal further evidence of the structure.

Excavations in the 1990 site extension uncovered a large feature in the southern end. This feature (R) is represented by a deposit of chinking, charcoal and ash located below the Fur Trade clay. Except for its eastern area, the feature was exposed but not excavated because of its discovery at the end of the field season.

The ash was very thick (ca. 25 cm) in the southeast corner of the feature and may extend below the chinking and charcoal in the remainder of it. Artifact recoveries from the ash deposit include a stone platform pipe bowl, a metal knife blade and a few trade beads. A flotation sample of the ash was collected and its analysis is forthcoming.

A post hole was found in unit 21K64D within the Fur Trade clay. It extends into Feature R and was partially cross-sectioned. Approximately 6.6% (11.0 kg) of the total chinking from the 1990 excavation was recovered from the feature and Fur Trade levels in this area of the site.

Further excavation of Feature R is necessary to examine the relationship of the ash to the chinking and charcoal and to determine whether or not any structural remains are present.

Excavation in the northern part of the site extension area resulted in the recovery of Fur Trade Period artifacts including three tinkling cones, a clay pipe bowl fragment, nine ceramic sherds, 48 lead shot and 503 glass trade beads. The majority (459) of these beads came from the eastern units in this area, from 21K54Q to 21K54U. Further excavation to the base of the Fur Trade Period is required in this area of the site.

The 1984 excavation revealed evidence of a building interpreted as a row housing style, typical of structures of the Fort Gibraltar I time period. This structure could have been 4.5 m wide and at least 7.0 m long. (Priess *et al.*1986:128). Three outer walls and a possible inner wall were found. The west wall was represented by a dense amount of wood-impressed chinking, chinking stained fire-reddened sand and charred wood fragments in a linear band 16 cm to 24 cm wide and 4.0 m long (Priess *et al.* 1986:132). These remains were located approximately 5 m west of Feature Q.

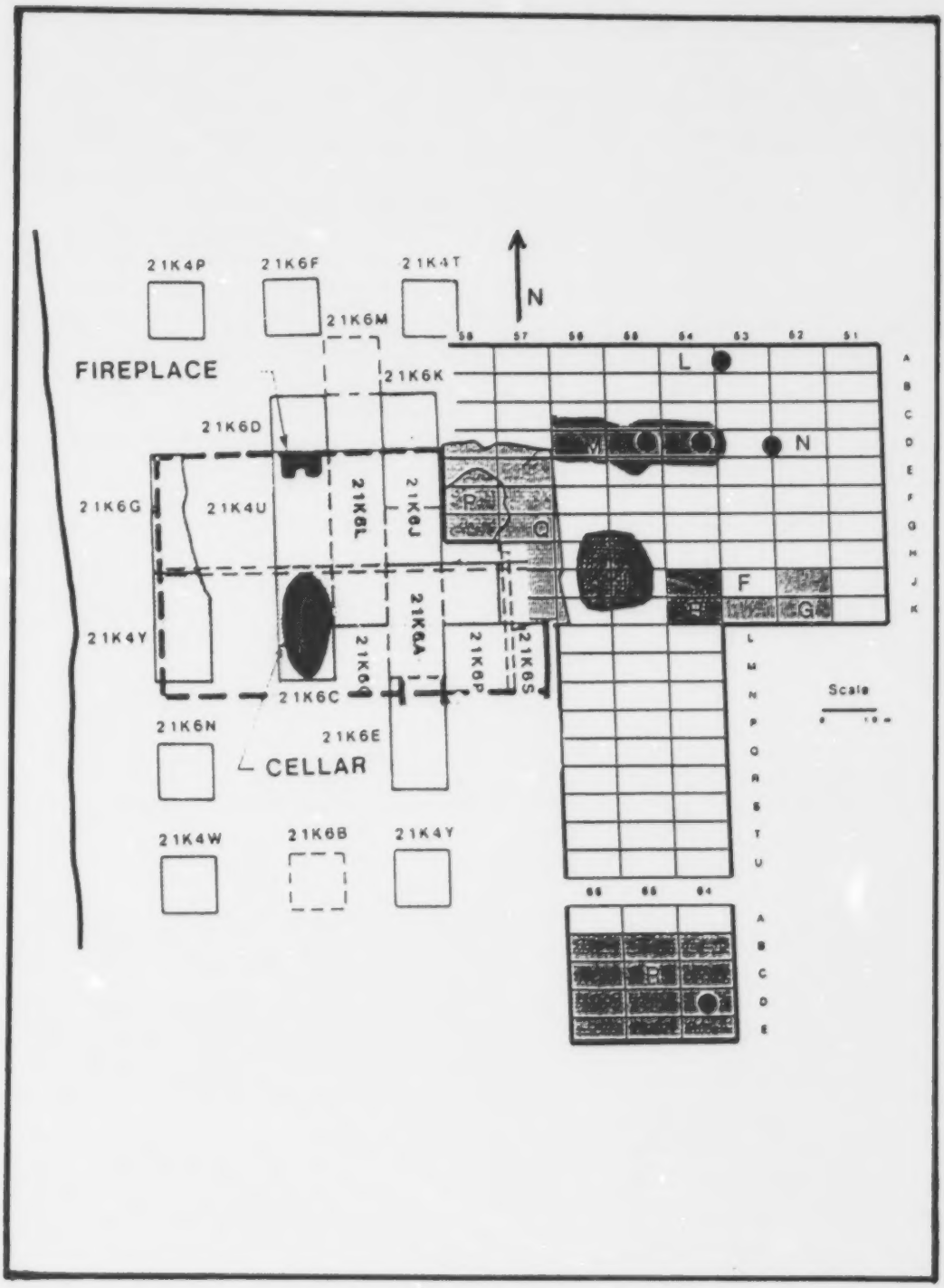


Figure 77: Composite Map of 1984 and 1990 Structural Evidence

The back edge of the fireplace hearth, the truncation of the carbon stained flooring along the northern edge of unit 21K6L, and the east-west turn of chinking in unit 21K6G perpendicular to the west wall beam chinking are seen as evidence of a north wall (Priess *et al.*1986:133). Feature M, excavated in 1990, probably represents an easterly extent of this north wall (Figure 77).

The south wall was excavated in the north edge of unit 21K6E, where a 20 cm–25 cm wide section of charred wood and chinking was located. This wall is located approximately 1.5 m southwest of unit 21K57K. Given the short length (1.0 m) of wall excavated, this could also represent a floor joist or an east-west inner wall.

The east wall of the structure has not been located. This wall could have been destroyed, dismantled or subjected to erosion. As no burnt timbers or charcoal were found, it is probable the original timbers were removed prior to the burning of the structure.

An inner wall is speculated to have been along the east wall of unit 21K6P and the west wall of unit 21K6S (Priess *et al.* 1986:133). This wall was oriented north-south and a section of charred flooring (1 m long, 16 cm–20 cm wide and 16 cm thick) was excavated. A large amount of chinking and charred wood was on top of this flooring. Flooring planks were identified as poplar and white oak (Priess *et al.* 1986:135). This area corresponds with 1990 Feature Q where additional flooring, a carbon stained flooring level and a dense chinking concentration were found. This large amount of structural debris could represent the outer (west) wall of another structure, rather than an inner wall. The cellar depression (Feature I) would be located just inside this wall. Features F, G and H would be further inside the building and part of the north wall would then be indicated by Feature M.

Given the quantities of trade items found in Feature I, the structure above this cellar could have been a storage area. This may represent one of the hangards mentioned by Roi:

> *Within the said enclosure were built the house of the partner, 2 houses for the men, a store, two hangards or stores, a blacksmith's shop and a stable; there was also an ice-house with a watch-house (guerite) over it; these houses were good log houses, large and inhabited.* (Coutts 1988:79).

This building may have been attached, or immediately adjacent to, the structure identified in 1984. Mennie stated that there were three houses (64 feet, 30 feet and 28 feet long), a detached kitchen (15 feet long) and a store (22 feet long) (Coutts 1988:80). Any of these buildings would have had fireplaces for heating. The dimensions of the 1984 structure correspond with those of the store, which may have had an adjacent hangard (storeroom).

The structural debris found during the 1984 field season above the flooring consisted of a 20 cm–24 cm thick deposit of charred beams, charred wood carbon staining, chinking and charcoal (Priess *et al.*1986:173). The spatial extent of this debris indicates that the walls collapsed inward. Since there was little structural

evidence of the north or south walls, most of the debris was oriented north-south parallel to the outer west wall and the inner east wall. This debris was represented by linear chinking concentrations and charred wood fragments.

Excavations in 1984 stopped at the flooring and carbon stained flooring level except in the cellar area and in the picket/post line (Priess *et al.* 1986:131). Investigation in 1990 below the flooring and carbon stained flooring level resulted in the recovery of Fur Trade artifacts such as beads and shot. Further excavation in unit 21K58G revealed a deep cellar depression where two trade rings and other artifacts were found. Future investigations should ensure that units are dug below flooring in order to maximize the recovery of artifacts and contextual data .

Further excavation is necessary to reveal more evidence of the speculated outer south wall and the inner east wall, and to confirm whether or not two structures are present.

8.0 ADMINISTRATION

8.1 Project Development

In 1989, the administrative bodies consisted of a senior Policy Coordinating Committee comprised of senior representatives from the three funding agencies (CPS, FRC, HRB), and a Site Coordinating Committee made up of operational personnel from the above mentioned agencies with representation from the Manitoba Archaeological Society (Kroker, Goundry *et al.* 1990:6–7). Based on the extremely positive results of the 1989 Pilot Public Archaeology Project and the many members of the public who indicated the program should be continued, the administrative group began to explore mechanisms that would enable the development of a similar program in 1990.

During the winter of 1989–1990, the two committees fused and invited interested representatives of local heritage groups to participate in the planning for the 1990 project. In addition, volunteers who had participated in the 1989 project were invited. The resultant body consisted of a fluctuating membership of approximately 40 individuals. During deliberations about the rationale and mechanisms of delivering a public archaeology program during the summer of 1990, it was determined that an ultimate goal would be the formation of a community-based, non-profit association to take charge of the delivery of public archaeology programs at The Forks. Accordingly, the group designated itself as the Interim Board of the Public Archaeology Association (Section 8.6) and struck an Operations Committee to develop plans for the 1990 project. This committee fulfilled the same role as the 1989 Site Coordinating Committee and consisted of Paul Melanson (Interim Board), Leo Pettipas (HRB), Ellen Lee (CPS), Al Baronas (FRC), Linda Seyers (MAS) and Sid Kroker (1989 Project Director).

During February and March 1990, the Operations Committee developed a proposed program and projected budget for submission to the three primary funding agencies. The proposed program was a modified version of the 1989 proposal (Kroker, Goundry *et al.* 1990:Appendix A). During the development of the proposal, the recommendations from the 1989 project (Kroker, Goundry *et al.* 1990:34–36) were adopted and the fiscal ramifications determined. The budget recommended by the committee envisioned a 16-week field program: 12 weeks of general public programming, 2 weeks for school programming, 2 weeks for set-up and take-down of the site, and attendant research, analysis and publication costs.

After submission to the Interim Board for approval-in-principle, the proposal and budget were forwarded to senior personnel of the three primary funding agencies. After approvals and commitments for funding had been received, the Operations Committee began to implement the 1990 Public Archaeology Project at The Forks.

8.2 Project Funding

The project was funded primarily by three agencies: Canadian Parks Service, The Forks Renewal Corporation, and Historic Resources Branch of Manitoba Culture, Heritage and Recreation. In addition to monetary contributions, each agency contributed assistance in goods, services and seconded staff (Table 33). Support was also provided by Winnipeg Core Area Initiative for a portion of the training salaries for the Archaeological Tour Guide positions. The Manitoba Archaeological Society contributed office space for the Participant Coordinator for the duration of the public portion of the project. At the completion of the field component of the project, artifact analysis was undertaken at facilities generously provided by the Manitoba Museum of Man and Nature.

In accordance with recommendation 5.7.1 (Kroker, Goundry *et al.* 1990:36), the Operations Committee decided that the retail operations of the 1989 Kiosk should be expanded to a full component of the 1990 project. The Manitoba Archaeological Society undertook to develop, staff and administer the Kiosk as an ancillary component to the 1990 Public Archaeology Project (Section 8.4).

The contributions of monies and seconded staff by each of the agencies are delineated below (Table 33). The secondment valuations are based upon project salary levels for the various positions and, as such, may not precisely reflect the actual cost borne by the agencies which seconded the personnel.

AGENCY	MONETARY	SECONDMENT	TOTAL	OTHER
CPS	50,000.00	-	50,000.00	Supplies
				Services
FRC	22,500.00	22,000.00	44,500.00	Services
HRB	37,500.00	24,000.00	51,500.00	Supplies
				Services
				Lab Facilities
CAI	5,048.96	-	5,048.96	-
MAS	-	-	-	Office Facilities
MMMN	-	-	-	Lab Facility
QCL	-	-	-	Office Facilities
Fees	6,247.00	-	6,247.00	-
			157,295.96	

Table 33: Support by Contributing Agencies

In addition to contributions by the funding agencies, the project instituted a modest registration fee of $12 for the first day and $6 for subsequent days. The implementation of a fee, recommended in the 1990 Administrative Report, was approved by the Operations Committee and the Interim Board. It was levied to raise a portion of the operating costs and to demonstrate to funding agencies that there was a movement towards fiscal self-sufficiency. The fee was collected on-site when the participants arrived for their allocated days.

The fiscal administration of the 1990 project was less complex than in 1989. Quaternary Consultants Ltd. (QCL) was the contracting agency. All monetary contributions from Canadian Parks Service, Historic Resources Branch and Winnipeg Core Area Initiative were directed to QCL. Reimbursable expenses and secondment fees for the Project Director were invoiced to The Forks Renewal Corporation, payable to QCL. The institution of a single fiscal administration as recommended (Kroker, Goundry *et al.* 1990:34) greatly simplified matters and prevented the possibility of serious cost overruns.

A finalized budget statement will be provided to the three funding agencies at the completion of the project fiscal operation. To date, expenditures are on target with anticipated costs as developed during the operational budget.

8.3 Project Staffing

The Project Team consisted of eleven people. The personnel and their funding sources are delineated in the following table (Table 34). The Project Director (Sid Kroker), a consultant archaeologist with Quaternary Consultants Ltd , is retained as the Site Archaeologist by The Forks Renewal Corporation. The Forks Renewal Corporation seconded Sid Kroker to act as the Project Director. The Field Supervisor position was, in part, filled by secondment from Historic Resources Branch. Other staff positions were funded from the monetary contributions of four agencies (CPS, FRC, HRB, CAI).

The duties of each of the staff positions are delineated below. The following table lists the individual who filled each of the positions and the source(s) of funding for that position.

Director
- responsible for overall administration of the project

Participant Coordinator
- responsible for booking and scheduling all individuals and groups who wished to participate

Field Supervisor
- responsible for all aspects of the excavation component
- supervision of excavation personnel and participants; excavation procedures, etc.
- preparation of final report

POSITION	NAME	FUNDING SOURCE
Director	Sid Kroker	FRC Secondment
Field Supervisor	Barry Greco	HRB Grant HRB Secondment
Laboratory Supervisor	Sharon Thomson	CPS/HRB Grant
Field Assistant	Arda Melikian	CPS/HRB Grant
Field Assistant	Paul Speidel	CPS/HRB Grant
Field Assistant	Lee-Anna Smith	CPS/HRB Grant
Field Assistant	Peter Filopoulos	CPS/HRB Grant
Laboratory Assistant	Lori Dueck	CPS/HRB Grant
Participant Coordinator	Marsha Palansky Karen Lawlor Pamela Goundry	CPS/HRB Grant CPS/HRB Grant QCL Secondment
Tour Guide	Vernon Nawagesic	CPS/HRB/CAI
Tour Guide	Elaine Ross	CPS/HRB/CAI

Table 34: Staff and Funding Sources

Laboratory Supervisor
- responsible for all aspects of the laboratory component
- supervision of laboratory personnel and participants
- artifact preparation and identification; computer cataloguing, etc.
- preparation of final report

Field Assistants (4)
- responsible for day-to-day supervision and instruction of participants
- maintaining field records

Laboratory Assistant
- responsible for day-to-day supervision of participants
- computer data entry

Tour Guides (2)
- responsible for providing visitor information to the general public

Kiosk Staff
- recruited, funded and administered by the Manitoba Archaeological Society. The staff and volunteers provided information to the public and serviced the project retail component.

The structure of the Project Team was hierarchical, wherein the two supervisors administered assistant staff members. Decisions on laboratory or field operations were made by the Director and the Supervisors. Decisions concerning scheduling and public programs were made by the Director and the Participant Coordinator. Decisions concerning the Kiosk operations were made in consultation between the Project Director and the MAS Kiosk Committee.

The 1990 Public Archaeology Program has had differing degrees of staff involvement over the course of the project. The staff began at staggered intervals and were employed for different periods. The Project Director has been involved from initial planning (February 1990), through the entire project, to the publication of this report. Other staff members have been involved for shorter durations. The first person to begin was the Participant Coordinator, who started her duties three weeks before the public programming was initiated on June 28. The field and laboratory supervisors began to organize their components on June 14 and the other staff members started to set up the operation on June 21 (one week before the public program). Most positions were terminated at the end of the field season (October 17), although the Field and Laboratory Supervisors continued during the preparation of this report. During the latter phases of the production of the report, Pamela Goundry and Leigh Hambly were employed as editors. These two individuals helped fuse different writing styles into a cohesive document. In addition, Leigh Hambly produced the report in a desktop publishing format.

8.4 Kiosk Operations

The Kiosk was housed in one of the three trailers at the site. The Kiosk was considered a separate entity with its own administration, staffing and budget, even though it functioned as an ancillary component of the 1990 Public Archaeology Project.

In 1989, the kiosk was primarly an information centre with limited opportunity for volunteers and public visitors to purchase publications and T-shirts. The day-to-day operations were undertaken by the Data Management Officer along with his other duties. During the 1990 season, the administration of the 1990 venture was undertaken by the Manitoba Archaeological Society, through the MAS Kiosk Committee. Liaison was effected between this committee and the Project Director. Daily operations were overseen by Sharon Appel (MAS Office Manager). The Kiosk maintained one staff position, filled by Jennifer Mucha. This position was supported in part by a Career Start grant. The Kiosk personnel were able to recruit volunteers from the MAS membership and from participants of the Public Archaeology Project to assist in operating the venue.

The Kiosk operated as the project information centre as well as a retail outlet. Distributional material relating to the project was available for the public, as were materials provided by Historic Resources Branch and Canadian Parks Service. Display space in the Kiosk area was used over the course of the project by severalgroups: St. Boniface Historical Society, Manitoba Genealogical Society,

Manitoba Naturalists Society, and a group of University of Manitoba graduate students directed by Dr. C. T. Shay, who developed an exhibit about the history of the rivers.

Within the retail aspect of operations, the Kiosk sold various publications and project-related souvenirs. The publications consisted of titles published by Manitoba Archaeological Society, Watson and Dwyer, The Forks Renewal Corporation, Manitoba Naturalists Society, St. Boniface Historical Society and The Forks Public Archaeology Project. The souvenirs consisted of specially imprinted clothing material—caps, buttons and T-shirts. These materials had been provided for sale by the Manitoba Archaeological Society, Peter Priess and The Forks Renewal Corporation.

Final accounting of the Kiosk component has been completed. Gross income was $4418.69. Debits consisted of $1843.15 for salary and $3147.90 for returns to vendors. Although the 1990 gross income increased from the 1989 operation income (Kroker, Goundry *et al.* 1990:32), the payment of a salaried position resulted in an overall deficit of $572.36. More aggressive marketing strategies are necessary to obviate this situation.

8.5 Public Involvement

The public component of the project was designed to accommodate all degrees of interest, as well as to provide a teaching experience for students within the social sciences curriculum.

8.5.1 Participants

As soon as announcements were made that individuals could register to participate in the 1990 Public Archaeology Program, intense public interest was evident. It seemed that the majority of the registrations for the entire summer were made during the first few days. The booking procedure was the same as in 1989. Individuals registered for their selected days by telephoning the Participant Coordinator. Confirming letters, with project information, were sent to all registrants.

Participation was limited to three days in order to accommodate as many people as possible. A modest registration fee was charged. Implementation of this fee did not curtail public response for participation in the project. During the summer, a total of 319 individuals (Appendix C) worked with the professional staff at the project. Some people booked their days as a block, while others spread their participation out over the summer in order to experience the evolution of a dig. Participant demographic statistics have not been compiled for the 1990 season. However, the age groupings were similar to 1989 (Kroker, Goundry *et al.* 1990:16–17). As in the previous year, family groups were common, with one or both parents and children participating.

8.5.2 School Programming

As in 1989, the 1990 project could in no way meet the expressed interest of the school system. Fourteen days in September were allocated to hands-on educational programming for students in the elementary grades. During these days, provisions were made for twice daily in-depth lecture programs. Both were immediately over-subscribed, creating a massive waiting list.

The hands-on program was identical to that which was offered to the general public participants. School class sizes were limited to 24 students, although some variation was acceptable. The classes were divided into three groups. Each group of students received a period of hands-on instruction in the excavation area, an equivalent period participating in laboratory activities and a walking history lecture tour of the National Historic Site. The lecture tour was undertaken by staff archaeologists from Historic Resources Branch and Canadian Parks Service. As each archaeologist has different areas of interest and expertise, these tours were never the same. On days when there was more than one tour leader, the students could often be heard comparing notes. On some days, the visiting archaeologist gave demonstrations of specific archaeological interest, such as stone tool manufacture by Gordon Hill and S. Biron Ebell, or the manufacture and use of an *atlatl* by Dr. E. Leigh Syms.

One school group, the Fort Garry Enhanced Program, booked students into the regular general public program. This provided the students with more opportunity for involvement and longer periods of participation within each of the excavation and laboratory components. The 14 days of hands-on school programming were filled by 11 schools (Appendix C) and involved 340 students of Grades 4 through Grade 8/9. Thirteen schools (Appendix C), encompassing 691 students, received the in-depth lecture program.

8.5.3 Public Observatory Component

In terms of public involvement, the Public Archaeology Program was, again, a resounding success. During the course of the summer operations, a total of 42,480 people came to observe the project. These individuals watched the progress of the staff and participant excavators, obtained the most recent information from the tour guides, collected the brochures about the project (available in English, French, Cree and Saulteaux) and visited the lab to examine the artifacts which were being processed. Many took the opportunity to sign the Guest Book located on the viewing platform at the excavation area. They also visited the Kiosk to view the current displays, purchase publications or souvenir items, or just chat with the staff.

Peak visitations occurred on the weekends (2,641 people on Canada Day). Tabulation shows that attendance throughout the week was higher than the previous year (Figure 78). The number of visitors is marginally greater than in 1989 but it must be emphasized that the project was four weeks longer in duration. Also, the project benefitted from major activities which occurred in Winnipeg during the summer, including the Western Canada Summer Games and the International Mennonite Conference.

In compiling statistics based upon the visitors who signed the Guest Book, it was noted that the number of Winnipeg individuals was down considerably from 1989 (Table 35). This may result from people who, having visited the project last year, felt that it would be repetitious to sign the book again this year. The number of visitors from rural Manitoba (Appendix D) and other Canadian provinces (Table 35) increased.

The numbers of American visitors (Table 36) were up 50% from 1989—211 compared to 140. The number of represented states remained nearly constant (32 in 1989; 33 in 1990).

The number of international visitors was also considerably greater (Table 37). In 1989, 175 individuals from 32 countries signed the Guest Book. In 1990, 239 individuals and five families from 42 countries visited the project.

8.6 The Forks Public Archaeology Association

In the 1990 Administrative Report, mention was made of initial phases of the evolution of a community-based, non-profit organization to act as the parent body for the delivery of public archaeology programming at The Forks (Kroker, Goundry *et al.* 1990:29–30). During the 1990 field season, many individuals from the Interim Board (Section 8.1) visited the project as participants and as interested colleagues. They became familiar with the daily operations and the logistical scope of the project. This familiarity translated into a commitment on their part to ensure the continuation of a Public Archaeology Program into the future.

During the summer, numerous committee meetings examined details of mandate, structure and operation of a public association. The results of these deliberations were presented at a public meeting in October 1990. At this time, nominations were taken for the positions of Founding Directors. These individuals were charged with incorporating the association under the name of The Forks Public Archaeology Association (FPAA). The FPAA is undertaking the development of a broad-based community membership as well as developing plans for the 1991 project.

LOCALITY	INDIVIDUAL	FAMILIES
Winnipeg	1686	87
Other:		
City Parks & Recreation		
Treehouse Day Care Centre		
Central Park Day Care		
B.L.A.S.T. Day Care		
Victor Play Centre		
Royal Day Care		
Sisler School		
Health Sciences Centre		
Rural Manitoba (Appendix D)	386	29
Provinces and Territories		
Alberta	178	9
British Columbia	202	11
New Brunswick	12	-
Newfoundland	9	-
Nova Scotia	24	-
North West Territories	10	-
Ontario	324	17
Prince Edward Island	1	-
Quebec	54	-
Saskatchewan	83	6
Yukon	1	-
TOTAL	2970	159

Table 35: Canadian Visitors Who Signed the 1990 Guest Book

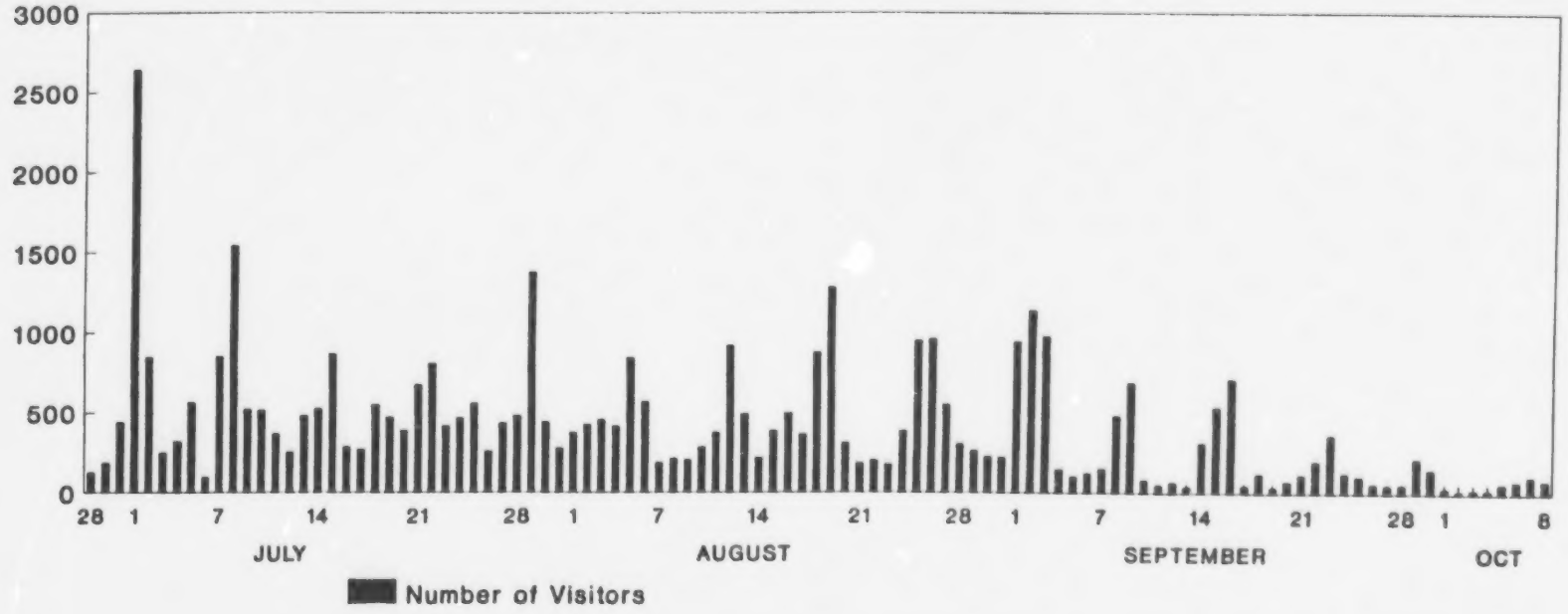


Figure 78: Record of 1990 Visitors

LOCALITY	INDIVIDUALS	FAMILIES
Alabama	2	-
Alaska	1	-
Arizona	4	-
California	36	2
Colorado	6	-
Connecticut	1	-
Florida	12	-
Hawaii	4	-
Illinois	6	1
Indiana	2	-
Iowa	2	-
Kansas	2	-
Louisiana	1	-
Massachusetts	3	-
Michigan	4	-
Minnesota	29	5
Missouri	8	-
Nevada	3	-
New Jersey	4	-
New York	8	-
North Carolina	2	-
North Dakota	17	1
Ohio	9	2
Oklahoma	3	-
Oregon	5	-
Pennsylvania	2	-
South Dakota	1	-
Texas	8	1
Utah	4	-
Virginia	2	-
Washington	7	-
West Virginia	2	-
Wisconsin	6	-
Unspecified State	5	1
TOTAL	**211**	**13**

Table 36: American Visitors Who Signed the 1990 Guest Book

LOCALITY	INDIVIDUALS	FAMILIES
Australia	18	2
Austria	1	-
Bahamas	1	-
Belgium	2	-
Chile	1	-
China	4	-
Colombia	1	-
Croatia (Yugoslavia)	1	-
Czechoslovakia	1	-
Denmark	1	-
England	77	1
France	7	-
Germany	24	1
Greece	1	-
Holland	12	-
Honduras	2	-
Hong Kong	4	-
Ireland	2	-
Israel	2	-
Italy	9	-
Japan	1	-
Kenya	2	-
Lesotho	2	-
Lithuania	1	-
Mexico	1	-
New Zealand	3	-
Northern Ireland	6	-
Norway	5	-
Pakistan	-	1
Paraguay	1	-
Peru	1	-
Phillipines	4	-
Poland	3	-
Scotland	17	-
Senegal	2	-
South Africa	1	-
Sweden	1	-
Switzerland	3	-
Trinidad	8	-
Wales	3	-
Zaire	1	-
Zimbabwe	2	-
TOTAL	239	5

Table 37: International Visitors Who Signed the 1990 Guest Book

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APPENDIX A

Glossary

GLOSSARY

Altithermal
a warm, dry climatic period (7000 to 4000 years ago). Also known as *Hypsithermal* or *Climatic Optimum*.

Archaic
an archaeological time period referring to Native history prior to the introduction of ceramic manufacture (ca. 7000 to 2000 years ago).

atlatl
an Aztec word that refers to a throwing board. Used to increase the distance that a spear can be thrown

Bakelite
the precursor of modern plastics, developed in 1909 by the American inventor Leo Baekeland. This material is brittle and dense.

Blackduck
an archaeological term that refers to a specific type of Native ceramics decorated with cord-wrapped object impressions before firing. By extension, the term also refers to the people who made this pottery (ca. 1400 to 500 years ago).

Cornaline d'Aleppo
term applied to drawn beads composed of two layers of glass. The inner core is a different colour than the outer layer. Examples are red on white and red on green.

crown
the front or face of a button.

drawn bead
beads made by drawing out or pulling a long, hollow cane from a glob of molten glass. The cane is then cut into workable sections and further divided into short bead lengths.

drawn nail
nails made by this method are cut from a length of drawn or extruded wire. Also known as *wire-cut*.

feature
a portion of an archaeological site which shows evidence of human activity. May be a hearth or remnants of a building foundation.

the flats
with reference to The Forks, a colloquial term used prior to 1900 that referred to the low-lying west bank of the Red River, immediately north of The Forks. The site of the *Shanty Town* (q.v.).

flow blue
a popular form of 19th century transfer print earthenware decoration. Flow blue designs were produced by introducing volatile chlorides to the kiln atmosphere during firing. The chlorides made the transfer print ink bleed outward, producing a softer, blurred outline.

grog
a mixture of ground bricks, retorts, crucibles, china and particles of fired clay. This mixture was added to brick clay as a means of strengthening bricks. Due to its non-plastic nature, grog does not shrink during firing. It provides cohesion and support to unfired clay.

hand-wrought
an adjective describing metal artifacts which have been individually made by a blacksmith, using a hammer and anvil.

Hard Rubber
rubber which has been hardened by vulcanization. The process was invented by Charles Goodyear in 1844 and improved by his brother Nelson in 1851. Buttons were made from this material during the 19th century. Also known as *India Rubber*.

Hypsithermal
see Altithermal

Immigration Sheds
buildings constructed in 1872 at The Forks as temporary housing for immigrant families. Demolished in 1885.

in situ
Latin phrase meaning in place. Refers to an artifact found in its original position.

Japanning
the process of applying a hard, glossy black finish to buttons to imitate Oriental lacquer.

Jesuit rings
17th to 18th century ornamental finger rings, originally associated with Jesuit activities. The rings later evolved into secular items of trade.

kaolin
a fine white clay, found in China, used for making porcelain. Also a general term that refers to the white ball clay used to make smoking pipes.

Laurel
an archaeological term that refers to a specific type of Native ceramics. Decorative patterns include punctates, dentates and incisions. By extension, the term also refers to the people who made this pottery (ca. 2100 to 900 years ago).

lot
minimum unit of excavation within a sub-operation. May be applied to soil layers, artifact clusters, individual artifacts or samples.

operation
Canadian Parks Service designator for culturally significant areas within a site. See sub-operation and lot.

repressing
the application of pressure to unfired brick, producing a denser, more uniform brick with sharp edges. This enables the manufacturer to impress a company name or trade name on the brick.

sand-struck
term applied to soft-mud bricks produced in molds using sand as a lubricant.

Selkirk
an archaeological term that refers to a specific type of Native ceramics, decorated only with punctates. By extension, the term also refers to the people who made this pottery (ca.1000 to 300 years ago).

Shanty Town
colloquial term referring to the temporary houses built on *the flats* (1875! 1882). Short-term village of transient settlers before leaving for homesteads.

sheet-cut
a technique of nail manufacture introduced about 1790. Tapered shanks were cut from a sheet of rolled iron and heads added individually, or later, by machine.

short beads
term used by Horace Beck (1928) as part of a system of bead classification. Short beads have a length more than one-third and less than nine-tenths their diameter.

stratum
Latin word meaning layer. Archaeologically used to refer to a horizontal band of soil.

sub-operation
Canadian Parks Service term used to designate excavation units, e.g., 58K, 52A, etc. Sub-division of *operation.*

tang
a projecting shank (of a knife, etc.) designed to fit into a handle.

temporal drift
gradual change in design or style of an artifact over time.

trade rings
see Jesuit rings

transfer print
popular form of porcelain decoration introduced in the 18th century and still in use today. The technique involves the transfer of a design from an etched and inked metal plate to paper and then to the object. Although many colours were used, blue was the most common prior to the 20th century.

tumbling
a process for rounding the edges of drawn glass beads. Beads, along with an abrasive mixture, are placed in a drum that is heated and rotated.

unit
individual excavation area within a site grid; equal to sub-operation. Equivalent to the Canadian Parks Service term *sub-operation.*

water-struck
term applied to soft-mud bricks made in molds using water as a lubricant.

APPENDIX B

Scientific Taxonomy

Scientific And Common Names Of Recovered Flora And Fauna *

ANIMALS	
Mammal	***Mammalia***
Rodents	*Rodentia*
Beaver	*Castor canadensis*
Muskrat	*Ondatra zibethicus*
Squirrel family	*Sciuridae*
Rabbits	*Lagomorpha*
Rabbit/Hare family	*Leporidae*
Carnivore	*Carnivora*
Wolf/Dog family	*Canidae*
Dog	*Canis familiaris*
Wolf	*Canis lupus*
Coyote	*Canis latrans*
Weasel family	*Mustelidae*
Skunk	*Mephitis mephitis*
Single-hooved Animals	*Perissodactyla*
Horse	*Equus caballus*
Cloven-hooved Animals	*Artiodactyla*
Cow/Bison/Moose/Elk group	*Artiodactyla* (large)
Pig/Sheep/Goat group	*Artiodactyla* (small)
Deer family	*Cervidae*
Moose	*Alces alces*
Elk	*Cervus cervus*
Cow/Bison family	*Bovidae*
Cow	*Bos taurus*
Bison	*Bison bison*
Sheep/Goat	*Ovis aries/Capra hircus*
Pig family	*Suidae*
Pig	*Sus scrofa*
Bird	***Aves***
Hawk/Eagle family	*Accipitridae*
Bald Eagle	*Haliaeetus leucocephalus*
Duck/Goose family	*Anatidae*
Duck sub-family	*Anatinae*
Trumpeter Swan	*Olor buccinator*
Goose	*Branta sp.*
Fish	
Sturgeon	*Acipenser fulvescens*
Freshwater Drum	*Aplodinotus grunniens*
Catfish/Bullhead	*Ictalurus sp.*
Walleye/Sauger	*Stiziostedion sp.*
Mooneye/Goldeye	*Hiodon sp.*
Pike	*Esox lucius*
Sucker family	*Catostomidae*

Amphibian	
Frog/Toad	*Anura*
Reptile	***Reptilia***
Snake	*Colubridae*
Gastropod (Snail)	***Gastropoda***
Shellfish	***Pelecypoda***
Money Cowrie	*Monetaria moneta*
Northern Quahog	*Mercenaria mercenaria*
Freshwater Clam	*Unionidae*
Fat Mucket	*Lampsilis radiata*
Pink Heel-splitter	*Proptera alata*
Fingernail/Pea Clam	*Sphaeriidae*

PLANTS

Grass family	*Gramineae*
Willow family	*Salicaceae*
Sandbar Willow	*Salix interior*
Peach-leaved Willow	*Salix amygdaloides*
Poplar	*Populus sp.*
Balsam Poplar	*Populus balsamifera*
Cottonwood	*Populus deltoides*
Trembling Aspen	*Populus tremuloides*
Birch family	*Betulaceae*
Hazelnut	*Corylus sp.*
Beech family	*Fagaceae*
Bur Oak	*Quercus macrocarpa*
Elm family	*Ulmaceae*
American Elm	*Ulmus americana*
Rose family	*Rosaceae*
Pin Cherry	*Prunus pensylvanica*
Pea family	*Leguminosae*
Vetch	*Vicia sp.*
Maple family	*Aceraceae*
Manitoba Maple	*Acer negundo*
Linden family	*Tiliaceae*
Basswood	*Tilia americana*
Olive family	*Oleaceae*
Ash	*Fraxinus sp.*
Black Ash	*Fraxinus nigra*
Green Ash	*Fraxinus pennsylvanica*
Morning-glory family	*Convolvulaceae*
Bindweed (Wild Morning-glory)	*Convolvulus sepium*

*Taxonomy based on Abbott (1954), Banfield (1974), Clarke (1981), Godfrey (1966) and Looman and Best (1979).

APPENDIX C

Participants During the 1990 Forks Public Archaeology Project

Individuals

Heather Adamson
June Adamson
Scott Armstrong
Erin Barker
Wendy Barker
Al Baronas
David Barr
Doug Barr
Lynne Barr
Chris Beaudry
Mark Beitz
Michelle Beitz
Jonathan Bentley
Judith Bernard
Blythe Bjornson
Eva Boldt
Brigette Bourrier
Grace Boux
Nathan Braun
Todd Braun
Judy Briggs
Marie Brooks
Malcolm Brown
Patrick Brown
Alexandra Bruning
Dieter Brunning
Shannon Bruning
Tyson Brunning
Meaghan Buisson
Shirley Burton
Allison Challes
Agnes Champagne
Daniel Chapko
David Chapko
Kirt Chapko
Sandra Chapko
Bruno Chaput
Joanne Chaput
Shirley Chaput
Thomas Chudwich-Garrett
Carol Clegg
David Clegg
Ian Clegg
Leon Clegg
Betty Cockriell
Benji Cohen
Vanessa Collins
Lauren Common
Tim Conrad
Beth Covvey
Andreas Dajic
Mirko Dajic
Monica Dajic
John Delaat
Eda Dengate
Leslie Dengate
Lynn Desilets
Christine Dmyterko
Stephanie Dmyterko
Alex Dolin
David Duval
Lynette Dyck
Blair Fay
Gail Fay
Ryan Fay
Lorna Feilberg
Carly Finkel
Gail Finkel
Zoe Finkel
Erin Fletcher
Kathleen Fletcher
Robert Fletcher
Christian Fontaine
Ron Ford
Kathy Foy
Margaret Foy
Phyliss Frayer
Gideon Garland
Marshall Garland
Matthew Garland
Andrew Gershback
Bev Gershback
Bob Gershback
Matthew Gershback
Andy Gibson
Mary-Joan Gibson
Michael Gibson
Michelle Gilbert
Paulo Grancairic
Tony Grancairic
Joe Grande
Jason Gren
Ryan Gren
Heather Griller
Natalie Griller
Paul Gudmundson
Pierre Guerin
John Gunn

Chris Haakman
Rorie Haakman
Loni Hamilton
Christina Hamson
Vera Hamson
Chris Hanley
Anne Hargreaves
Jan Harper
John Harper
Fjola Hart
Kim Hart-Wasekeefikaw
George Hartlen
Damon Hartung
Marya Heads
Krista Heisinger
Ramzie Helewa
Karla Helgason
Pam Henderson
Lorraine Hercus
Wendy Hiebert
Leanne Hildebrand
Jill Hillcox
Ingrid Hillman
Livia Hillman
Sarah Hockridge
Dylan Hoemsen
Joan Hoemsen
Ray Hoemsen
Travis Hoemsen
Jason Hooker
Steven Hunnie
David Jacks
Eli Jacks
Karen Jacks
Kevin Jaworski
Sandra Johnston
Shannon Johnston
Tanya Johnston
Heather Jones
Sarah Kalcsics
Beth Kerstetter
Brad King
Michelle Kish
Carmen Koepke
Troy Koepke
Jennifer Kohut
Denise Kolesar
Margaret Koreman
Gunter Kraus
Darcy Lambert
Troy Lambert
Keven Lamoureux
Elizabeth Lanphear
Karen Lawlor
Alex Lawlor-Guerin
Kevin Lawson
Jacqueline Legal
Katherine Legal
Brian Lennox
Peter Lennox
Darcy Leonoof
Frederik Lesage
Gilles Lesage
Matthieu Lesage
Thierry Lesage
Tanya Lester
Mary Ellen Levasseur
Angie Lightfoot
Scott Lightfoot
Cheryl Long
Michael Long
Douglas MacFarlane
Pat MacRae
Jordi Malasiuk
Susan Maloney
Amanda Marier
Craig Marshall
Joan Marshall
Dawna Marynuk
Linda Matheson
Peter Mayer
Janette McAllister
Lindsey McBain
Ken McCullough
Lindsey McCullough
Kim McDonald
Kirsten McDonald
Steven McDonald
Belle McGuckin
Brendan McManus
Devin McManus
Jean McManus
Doug Melnyk
Ria Meronek
Joyce Meyer
Chris Miller
Michelle Morgan
Dawn Morin
Dennis Morin
Leslie Morin
Marlene Morin
Ryan Morin
Katherine Morris
Melanie Morris
Carla Myketa
Carolyn Nazeravich

Rebecca Nelson
Karla Nemetchek
Kristin Nemetchek
Andrew Nesbitt
Anne Nesbitt
Rose-Anne Nesbitt
Darren Officer
Joanne Olchowecki
May Painchaud
Shanna Payment
Murray Peterson
Janis Phillips
Dora Provinciano
David Quanbury
Max Reed
Mark Reid
Andrew Reimer
Carlton Reimer
Maria Reimer
Mavis Reimer
Kelly Rey
Coleen Robb
Thomas Robertson
Judy Roe
Dave Russell
Doug Sadler
Ruth Sadler
Jennifer Sadowski
Susan Sadowski
Gilbert Savard
Joel Savard
Lisbeth Savard
Lolita Sawatzky
Carl Schmidt
Astrid Scholte
William Schroeder
Jennifer Schulz
Renate Schulz
Mike Seepish
Dale Shafto
Kiri Shafto
Doug Sharpe
Kristi Sigurdson
Heather Simister
Benji Small
Jeffy Small
Lily Small
Heather Sorko
Ryan St. Hilaire
Mary Steinhoff
Rob Stevenson
Anne Stewart
Shelly Stewart
Cliff Strachan
Elaine Szymanski
Francoise Tetrault
Raphael Tetrault
Andrew Toews
Mary Toews
Kristine Trudeau
Ruth Turnbull
Anne Turner
Pat Walker
Jan Wardell
Patti Wardell
Melanie Watkins
Timothy Weakley
Jeremie Webster
Dionne Wilde
Henrietta Wilde
Barbara Wilson
J.A. "Sandy" Wilson
Michelle Wilson
Adam Young
Kim Young
Rob Young
Janet Zebrinski
Helen Zink

Schools Participatng In The Hands-on Program

SCHOOL	GRADE	STUDENTS	TEACHER
D. W. Penner	5	18	Shelagh Powell
D. W. Penner	5	19	Shelagh Powell
Fort Garry Enhanced Program	6	18	Linda Jijian
Glen Elm School	6	18	Kim Gowaryluk
Gordon Bell High School	8	24	Henry Huber
H. S. Paul School	5	26	Bill Zuk
Lac du Bonnet School	8	26	Russ Reid
Lac du Bonnet School	8	24	Russ Reid
Lavalee School	8	21	Jack Fraser
Monsignor J. K. McIsaac	6	16	Chris Batison
River West Park School	8/9	30	Carol Husack
River West Park School	8/9	30	Carol Husack
Sansome School	7/8	22	Anne Williams
Westdale Junior High	8	27	Sergei Sherman
Wolseley School	4/5/6	21	Ellen Kolisnyk
TOTAL		**340**	

Schools Receiving The In-depth Lecture Program

SCHOOL	GRADE	STUDENTS	TEACHER
Beaumont School	2/3	62	Sandra Johnston
College Louis Riel	11	10	Albert Dube
Ecole Tache	6	21	Lorrain Preject
Jefferson Junior High	7/8	101	Donna Babick
Jefferson Junior High	8/9	85	Lucy Bauer
Marion School	8	22	Wilmer Chase
Queenston School	4/5/6	67	Edna Choham
Ramah Hebrew School	4	32	Pat Leclair
Regent Park School	6	45	Lynn Scott
Selkirk Elementary	6	33	Bruce McLaren
Sister MacNamara	6	21	M. Frolich
St. Emile School	8	19	Louise Thibault
St. John's High School	8	52	Murray Scott
St. John's High School	8	42	Gary Nix
St. John's High School	8	43	Sandra McIntosh
West Kildonan Collegiate	11	36	Helen Harvie
TOTAL		**691**	

Appendix D

Rural Manitoba

Manitoba Locales - Visitors who signed Guest Book - 1990

Altona	2 Individuals
Anola	7 Individuals, 3 Families
Arborg	1 Individual
Argyle	1 Individual
Baldur	1 Individual
Balmoral	1 Individual
Basswood	2 Individuals
Belmont	2 Individuals
Benito	1 Individual
Birds Hill	1 Individual
Birtle	3 Individuals
Boissevain	2 Individuals
Bowsman	1 Individual
Brandon	43 Individuals, 5 Families
Brookdale	1 Family
Carberry	2 Individuals
Carman	5 Individuals, 1 Family
Clanwilliam	2 Individuals
Cranberry Portage	1 Individual
Crandall	2 Individuals
Crane River	1 Individual
Darlingford	1 Individual, 1 Family
Dauphin	5 Individuals
Decker	2 Individuals
Deleau	2 Individuals
Dufresne	1 Individual
Dugald	5 Individuals
East Braintree	1 Individual
Ebb & Flow	1 Individual
Elm Creek	1 Individual
Eriksdale	1 Family
Falcon Beach	1 Individual
Flin Flon	2 Individuals, 1 Family
Foam Lake	1 Individual
Fort Alexander	2 Individuals
Fraserwood	2 Individuals
Gillam	4 Individuals
Gimli	4 Individuals, 1 Family
Glenboro	6 Individuals
Glenlea	2 Individuals
Gods Lake Narrows	2 Individuals
Grand Rapids	1 Individual
Grandview	1 Individual
Great Falls	3 Individuals

Gretna	1 Individual
Grunthal	2 Individuals
Hamiota	7 Individuals
Hartney	1 Individual
Haywood	1 Individual
Holland	2 Individuals
Homewood	1 Family
Iles Des Chenes	3 Individuals
Inwood	2 Individuals, 1 Family
Island Lake	1 Individual
Kane	2 Individuals
Kenton	2 Individuals
Kenville	1 Family
Killarney	5 Individuals
Kleefield	1 Individual, 1 Family
La Broquerie	5 Individuals
Lac Du Bonnet	15 Individuals
Landmark	2 Individuals
Langruth	1 Individual
Leaf Rapids	2 Individuals
Letellier	1 Individual
Lockport	2 Individuals
Lorette	15 Individuals, 1 Family
MacGregor	1 Individual
Mariapolis	2 Individuals
Meadows	2 Individuals
Melita	1 Individual
Miami	1 Individual
Minitonas	2 Individuals
Minnedosa	2 Individuals
Morden	6 Individuals, 1 Family
Neepawa	1 Individual
Niverville	3 Individuals
Norway House	1 Individual
Notre Dame Des Lourdes	5 Individuals
Oakbank	10 Individuals
Oakland	1 Individual
Oak River	1 Individual
Onanole	1 Individual
Otterburne	1 Individual
Peguis	2 Individuals
Petersfield	4 Individuals
Pilot Mound	1 Individual
Pine Falls	1 Individual
Piney	1 Individual
Ponemah	1 Individual
Poplar Point	2 Individuals
Portage La Prairie	13 Individuals, 2 Families

Powerview	1 Individual
Reston	1 Individual
Roblin	4 Individuals
Rosenort	1 Individual
Rosser	5 Individuals
Russell	2 Individuals
St. Adolphe	2 Individuals
St. Andrews	1 Individual
St. Jean Baptiste	2 Individuals
St. Joseph	1 Individual
St. Lazare	1 Individual
St. Malo	3 Individuals
St. Pierre-Jolys	2 Individuals
Ste. Anne	1 Individual
Ste. Rita	1 Family
Ste. Rose Du Lac	2 Individuals
Sandy Lake	2 Individuals
Sanford	1 Individual
Selkirk	10 Individuals
Shilo	1 Individual
Shoal Lake	1 Individual
Sidney	1 Individual
Snowflake	2 Individuals
Springstein	1 Individual
Starbuck	3 Individuals
Steinbach	9 Individuals
Stonewall	1 Family
Stony Mountain	4 Individuals
Sundance	2 Individuals
Swan River	6 Individuals, 1 Family
Teulon	2 Individuals
The Pas	4 Individuals
Thompson	15 Individuals, 3 Families
Treherne	1 Family
Tyndall	1 Individual
Vermette	2 Individuals
Virden	3 Individuals
Wanipigow	2 Individuals
Wasagaming	2 Individuals
Waskada	1 Individual
Wawanesa	2 Individuals
Waywayseecappo	1 Individual
Whitemouth	1 Individual
Winkler	7 Individuals
Winnipeg Beach	1 Individual